Vocationalisation of Education in India: A Regional Perspective
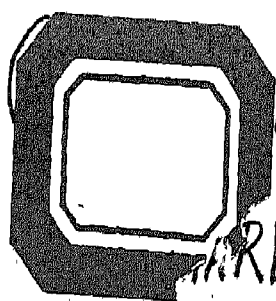
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A Preliminary Report

For Regional Development

Jawaharlal Nehru University

CHAPTER III

OCCUPATIONAL TYPOLOGIES AND IDENTIFICATION
OF DISTRICT LEVEL VOCATIONS

This chapter is concerned with a two fold task.

First, we attempt to classify the districts of India into

a few typologies on the basis of broad similarity of

occupational characteristics within each typology of

districts. Once the districts have been classified into

a few broad typologies, one can expect to find some

common pattern of vocational courses which may be suitable

for them. Secondly, the procedure for vocational plan

formulation outlined in the last chapter is applied to a

few districts out of each typology. The results in respect

of the vocational courses suggested for these districts

and their approximate in-take strength are then analysed.[1]

In the next two chapters complementary approaches are tried

out on an experimental basis.

III.1   The Occupational Specialisation Co-efficients

In preparing occupational typologies on the basis

of Census occupational data, the first problem one

encounters is to find some way for measuring occupational

similarity when one is dealing with nine occupational

divisions, which are further classified into as many as

95 two digit level occupational groups. Even if one

confines ones attention to the nine major divisions,

clubbed into seven in the Census 1971, the problem of

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[1] In the final report the results of this procedure
     would be presented for all major districts.

measuring similarity is not made much easier. For example, if one proceeded to classify the districts into a few groups on the basis of the percentage of working force in one of the occupational divisions falling within a few ranges, say 0-10%, 10-20%, ... 90-100%, this would take account of similarity only in terms of a single occupational division. Districts falling within one range could still differ considerably in terms of the percentage of working force falling within the other occupational divisions.

In order to circumvent this problem, we relied upon a measure which is based on a global view of occupational structure and does not depend upon similarity in terms of any single or specific group of occupational divisions. This measure, the co-efficient of occupational speciali- sation, is akin to the co-efficient of industrial specialisation and is based on a comparison of the propor- tionate occupational structure of different districts with some occupational structure treated as the bench mark occupational structure - in the present case the All-India occupational structure. The deviations between a district and All-India proportions of working force employed in different two digit level occupational groups are aggregated after ignoring the direction of deviation. The aggregate of absolute value of these occupational differences for a district ⬤⬤ is termed the co-efficient of occupational specialisation for that district.[1] If this aggregate is multiplied by 100, we get this co-efficient in the form of a percentage. Symbolically the co-efficient of

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[1] Walter Isard, "Methods of Regional Analysis", Chapter IX.

occupational specialisation may be expressed as:

$$S_j = 100 \times \sum_i \left| \left[\frac{O_{ij}}{\sum_i O_{ij}} - \frac{\sum_j O_{ij}}{\sum_j \sum_i O_{ij}} \right] \right| \cdots (1)$$

$$j = 1, 2, 3 \cdots 380$$

Where O_{ij} gives the number of workers in two digit level
occupation i in district j and S_j is the value of
this co-efficient for district j.

In case a certain district has a percentage
occupational structure which is completely identical
to the All-India occupational structure, the sum of
differences would equal zero, which indicates the
maximum possible degree of occupational diversification,
for it equals the diversification of occupations for
the country as a whole. On the other extreme, if all
the working force is concentrated in one single occu-
pational group, the value of this co-efficient would
approach 100, if the occupational structure is expressed
in percentage terms and unity if expressed in proportionate
terms. Within the extremes of zero and one hundred
percent, the higher the value of the specialisation
co-efficient, the greater does it show predominance of
only a few occupational groups in that district. Higher
values of this co-efficient and thus greater degrees of
occupational specialisation, are likely to be negatively
associated with the level of development for, as a
general rule, the process of development results in an
increase in the degree of diversification and hence in a
decline in the value of the co-efficient of occupational
specialisation.

For the purpose of estimation of district occupational specialisation co-efficients, the rural and urban working force within each two digit level occupational group of a district was clubbed together, for in case of specialisation co-efficients, there was no sense in finding them separately for rural and urban components of a district. The values of the occupational specialisation co-efficient for 174 districts for which it has been calculated are given in table III.1. Their distribution among the different ranges for the various States, as also for India as a whole, is given in table III.2. As may be observed, the largest number of districts are concentrated in the category of 50-60%. In the highly diversified group of 30-40%, there are 12 districts of which 10 fall within the states of Maharashtra and Gujarat. In the least diversified group of 90-100%, the districts are found mainly in the states of Assam, J & K, Maharashtra and U.P. Since districts of Maharashtra are prominent both in the highly diversified as well as highly specialised occupational groups, this brings out the highly dualistic nature of Maharashtra's economy.

III.2   The Co-efficient of Standardised
         Occupational Deviations.

Although the districts falling within a 10% range of occupational diversification co-efficients could be considered to be broadly similar in respect of their overall deviation from the All-India pattern of occupational diversification, but they need not be similar in respect of the occupational groups which predominate in those districts and are primarily responsible for deviation from

Table III.1 : Districtwise occupational
Specialisation Co-efficient (Sj)

Name of the Districts	Specialisation Co-efficient Sj
HARYANA	
Gurgaon	56.22
Rohtak	65.62
Mahendragarh	74.86
Hissar	52.79
Jind	68.51
West Bengal	
Murshidabad	64.25
Nadia	47.37
24 Parganas	54.14
Bankura	47.82
Burdwan	64.86
Midnapore	54.84
Cooch Behar	56.50
Darjeeling	89.72
Calcutta	65.55
BIHAR	
Shahabad	46.57
Champaran	54.18
Darbhanga	52.37
Monghyr	55.45
Ranchi	50.43
Singhbhum	64.47

Table III.2: Frequency Distribution of Co-efficients
of Occupational Specialisation

Co-efficient of Specialisation	Uttar Pradesh	Gujarat	Himachal Pradesh	Jammu & Kashmir	Maharashtra	Assam	Punjab	Haryana	Orissa	Bihar	West Bengal	Total
90 - 100	2	-	2	2	4	0	0	0	0	0	1	11
80 - 90	4	-	1	2	3	0	0	0	1	1	1	13
70 - 80	4	-	3	-	0	0	0	1	1	0	0	9
60 - 70	6	1	6	3	-	1	3	2	3	6	3	34
50 - 60	16	7	-	3	7	2	7	2	5	5	3	57
40 - 50	8	7	-	-	7	0	7	0	2	5	2	38
30 - 40	2	3	-	-	7	0	0	0	0	0	0	12
TOTAL	42	18	10	10	23	10	17	5	12	17	10	174

the All-India pattern. From the point of view of classification of districts into different types this information is necessary in order to reveal not only the magnitude but also the character of deviation from the All-India occupational pattern. It was, therefore, imperative to devise a method which should go beyond the co-efficients of occupational specialisation and reflect differences in character of deviation of a district from the All-India occupational pattern. A simple extension of the methodology underlying the co-efficient of specialisation which comes to ones mind is to try to find out the aggregate value of absolute differences between a district and the All-India occupational percentages separately for all the two digit level occupational groups falling within a single one digit level occupational division. For example, one could sum up absolute differences between a district and All-India percentage of working force engaged in the twenty occupational groups within division 0-1, eight occupational groups within division 2 and so on. Thereafter one could try to classify the districts in terms of the occupational division which accounted for the maximum aggregate deviation, then in terms of division which accounted for the second largest aggregate deviation and so on.

But the flaw from which the above procedure towards identification of typologies would obviously suffer is the fact that one would expect to find a systematic interdependence between the aggregate deviation for different one digit level occupational divisions and the size of occupational divisions. For example, the occupational

divisions 7-8-9, for which data are available only in a combined form, form the largest occupational set in terms of the proportion of working force engaged in them. We, therefore, naturally found that the aggregate deviation was invariably the highest for the 7-8-9 occupational division in all the districts. At the other extreme it was almost always the lowest in case of occupational division ----, which generally engages the lowest proportion of working force. These results obviously cannot be interpreted to imply that division 7-8-9 is the most prominent division responsible for deviation from All-India position in all the districts and division - is every where the least prominent.

To get over this difficulty, it was decided to standardise the aggregate of absolute differences for each occupational division in terms of the relative size of that occupational division. This was achieved by dividing the aggregate absolute deviations from each occupational division by the percentage of total working force engaged in that division. In this way the extra large aggregate deviations in case of enormous divisions like 7-8-9 would get deflated through division by a large denominator while the relative position of small occupational divisions would get upgraded through division by comparatively smaller denominators. The co-efficients thus derived have been designated by us as "standardised occupational deviations", and symbolically their method of estimation may be expressed as:

$$D_{nj} = \frac{\sum\limits_{i} \left| \left[\dfrac{O_{mnj}}{\sum\limits_{n}\sum\limits_{m} O_{mnj}} \right] - \left[\dfrac{\sum\limits_{j} O_{mnj}}{\sum\limits_{j}\sum\limits_{n}\sum\limits_{m} O_{mnj}} \right] \right|}{\sum O_{mnj}} \quad \text{----(2)}$$

Where O_{mnj} is the number of workers engaged in mth
two digit level occupational group within occupational
division n in district j and D_{nj} is the co-efficient of
standardised occupational division for occupational
division n of district j.

III.3   Classification of Districts

The values of the "standardised occupational
deviations" for occupational divisions of different
districts are given in table III.3. Having tabulated
these values, the next task was to devise a method
for classifying districts on the basis of these values
into typologies having similar occupational deviation
characteristics. The method of classification adopted
here is a step-wise procedure, the first step being to
classify the districts into seven groups depending upon
which of the seven one digit level combinations of
occupational divisions according to Census 1971 occupied
rank I. The rationale of this step is to identify the
occupational division which is responsible for the
maximum standardised deviation in each district and then
to club together the districts for which the same occupa-
tional division (or their combination) occupies rank I.
A classification of districts based on rank I is given
separately for each state in table III.4. As may be
observed, in almost all the states, rank I in terms of
standardised deviations is occupied either by the
occupational division 2, which pertains to "Administrative,
Executive and Managerial Workers", or by division 6, which

covers "Farmers, Fishermen, Hunters, Loggers and
related workers". Only in case of Maharashtra,
division 7-8-9, which covers "Production and related
workers", is of some importance in giving rank I to
a few districts. Barring this the exceptions are
rather rare.

Since the majority of districts get clustered under
occupational divisions 2 & 6 in terms of rank I, in
step two it was decided to further classify the districts
falling under divisions 2 & 6 into the remaining five
divisions depending upon which of the five one digit
level occupational divisions (or their combination)
occupied rank II among these districts. The objective
of this was to identify districts in terms of the second
most important occupational division responsible for
standardised occupational deviation. In case of a good
many districts, the districts which fell within occupa-
tional division 2 in terms of rank I, at this second stage
they came within division 6, or vice-versa. In other
words, in a substantial number of districts rank II also
went to divisions 2 or 6, but to a lesser degree than in
terms of rank I. In the case of many districts in
Maharashtra, Punjab and U.P., division 5, covering
"service workers", came to occupy rank II. In case of
U.P. occupational divisions 4 and 7-8-9 also accounted
for rank II in case of a sizeable number of districts.

In view of the predominance of divisions 2 & 6
in terms of ranks I and as well as rank II, it was
imperative to further classify the districts falling
within divisions 2 & 6 in terms of their rank III. We

thus got the third layer of districts, in case of which
rank III has also been taken account of for determining
their class. In layer one we had districts where rank I
by itself, if going to divisions other than 2 & 6, was
used to determine the class. In layer two we had districts
where two ranks, I & II, were taken into account for
classification. After obtaining third layer districts,
at the final stage we clubbed together some of the smaller
categories within each layer, specifically where rank I
& II went to the same two occupational divisions, only
the order of rank being reverse. The final list of
occupational typologies and the districts falling within
them is presented in table III.5, where A, B & C pertain
to typologies belonging to layer one, two & three respecti-
vely. The classes which have been clubbed together to
form a single typology are indicated within brackets
appearing adjacent to typology number. The sequence of
numbers within each bracket indicates the divisions which
got ranks I, II and III in case of districts covered by a
typology. For example, in typology C 2, we had districts
in which ranks I, II & III went to occupational divisions
6, 2 & 5 respectively as also the districts where these
ranks went to divisions 2, 6 & 5 respectively.

The above scheme of occupational classification
of districts is derived exclusively with reference to ranks
in terms of the "standardised occupational deviations",
without any recourse to occupational specialisation co-
efficients. It would be worthwhile to introduce further
sub-classification within the typologies derived above on
the basis of the co-efficients of occupational specialisation

For example, if we consider districts with specialisation
co-efficients above 70% as occupationally specialised and
those in the range 30-70% as occupationally diversified,
we shall have double the above number of occupational
typologies, since each typology of table III.5 would be
sub-divided into occupationally specialised and occupa-
tionally diversified groups. As at present calculations
are available only for about 175 districts, this further
sub-classification is not presented. But when estimates
of the two types of co-efficients become available for
all the districts, the complete list of typologies can be
prepared. The final scheme of envisaged classification
for deriving occupational typologies may thus be schemati-
cally presented as in table III.6. (Diagram 2)

III.4   An alternative basis for typological
         classification

The above scheme of classification is based on a
ranking of the co-efficients of "standardised occupational
deviations" for the main occupational divisions. As
explained in Section III.2 above, the "standardised
occupational deviations" are an extension of the concept
of co-efficient of occupational specialisation, meant to
determine the relative contribution of different occupa-
tional divisions in generating the deviations of district
level occupational structure from the All-India occupa-
tional structure. As in case of the co-efficient of
occupational specialisation, so also in case of the
standardised deviations, the aggregate deviations were

Diagram 2. Scheme of Classification for Deriving Occupational Typologies

All Districts

Occupationally Specialised Districts ($S_j > 70\%$)

Occupationally Diversified Districts ($S_j > 30\%$ & $< 70\%$)

Table III.D : Standardised Occupational Deviations (Dvj)

Districts		01	2	3	4	5	6 .	7-8-9
HARYANA								
Gurgaon	Dvj	.30	.76	.19	.27	.62	2.70	.59
	Rank	5	2	7	6	3	1	4
Rohtak	Dvj	.31	.34	.67	.69	.64	5.38	.56
	Rank	7	2	4	3	5	1	6
Mahendra-garh	Dvj	.42	.92	.37	.27	.63	2.74	.77
	Rank	6	2	5	7	4	1	3
Hissar	Dvj	.44	.64	.41	.49	.55	4.09	.41
	Rank	5	2	6	4	3	1	7
Jind	Dvj	.25	.77	.39	.56	.79	1.35	.69
	Rank	7	3	6	5	2	1	4
ORISSA								
Balasore	Dvj	.35	.42	.37	.26	.44	.84	.69
	Rank	3	4	6	7	5	1	2
Sambalpur	Dvj	.07	2.20	.51	.55	.24	1.13	.44
	Rank	7	1	3	4	6	2	5
Mayorbhanj	Dvj	.45	1.39	.51	1.12	.59	.08	.70
	Rank	7	1	6	2	5	3	4
Sundergarh	Dvj	.36	.32	.30	.72	.52	1.01	.74
	Rank	6	1	7	4	5	2	3
Ganjam	Dvj	.27	1.72	.47	.40	.32	.91	.52
	Rank	7	1	4	5	6	2	3
Puri	Dvj	.35	1.27	.43	.30	.19	.95	.59
	Rank	4	1	5	6	7	2	3
Koraput	Dvj	.27	2.82	.33	.21	.45	1.41	.62
	Rank	6	1	5	7	4	2	5
Boudkhand-wal	Dvj	.43	1.36	.34	.32	.32	1.01	.77
	Rank	4	1	5	6	7	2	3
Kalahandi	Dvj	.44	3.07	.44	.91	.41	.89	.80
	Rank	5	1	6	2	7	3	4
Bolangir	Dvj	.46	4.35	.43	.79	.25	.94	.61
	Rank	5	1	6	4	7	2	3

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State	Occ	5	6	7-8-9
Bihar		Singhbhum	1. Shahabad 2. Sarain	
			3. Champaron 4. Darbhanga	
			5. Monghyr 6. Ranchi	
			7. Dhanbad 8. Patna	
Punjab			1. Rupar 2. Jullundur	
			3. Kapurthala 4. Patiala	
			5. Bhatinda 6. Sangrur	
			7. Hoshiarpur 8. Gurdaspur	
			9. Ferozepore 10. Amritsar	
			11. Ludhiana	
West Bengal			1. 24 Parganas 2. Midnapore	
			3. Calcutta 4. Birbhum	
			5. Hoogly 6. Howrah	
			7. West Dinajpur	
Assam			1. Mizo 2. Kamrup	1. Lakhimpur
			3. Goalpara	2. Sibsaga
				3. N.C.
Haryana			1. Gurgaon 2. Rohtak	
			3. Mohendragarh	
			4. Hissar 5. Jind	
Orissa			1. Balasore	
			2. Cuttack	

Jammu & Kash

1. Ladakh

Occupational Divisions occupying rank I

State	01	2	3	4	5
Bihar		1. Bhagalpur 2. Muzaffarpur 3 Purnea 4. Gaya 5. Saharsa 6. Champaran 7. Palamal 8. Hazaribagh			Sing
Punjab					
West Bengal		1. Murshidabad 2. Nadia 3. Bankura 4. Burdwan 5. Jalpaiguri 6. Cooch Behar 7. Darjeeling 8. Pun 9. Malda			
Assom		Nowgong	1. Darang 2. Cachar		
Haryana					
Orissa		1. Sambalpur 2. Mayurbhanj 3. Sundorgarh 4. Ganjam 5. Puri 6. Koraput 7. Bond-Khandwal 8. Kalahandi 9. Bolangir 10. Dhenkanal			

Table III.5: Occupational Typologies

Typology A 1

  (3, 7, 6)

  (3, 5, 7)

<u>State</u> Assam 1. Darang

               2. Cachar

Typology A 2

  (7,2,6)

  (7,6,4)

  (7,6,3)

  (7,4,)

<u>State</u>

  Assam — 1. Lakhimpur

          2. Sibsagar

          3. North Cachar

<u>Maharashtra</u>

        1. Ahmednagar

        2. Nanded

        3. Osmanabad.

        4. Poona

        5. Greater Bombay

<u>Uttar Pradesh</u>

        1. Rai Bareli

        2. Shahjahanpur

<u>Jammu & Kashmir</u>

        1. Doda

Typology A 3

  (4,)

<u>Himachal Pradesh</u>

        1. Lahul

        2. Kinnaur

        3. Sirmaur

        4. Kulu

<u>Uttar Pradesh</u>

        1. Gharwal

        2. Uttarkashi

        3. Hardoi

<u>Jammu & Kashmir</u>

        1. Ladakh

Typology B 1

  (6, 3,)

  (6, 4,)

<u>State</u> Assam 1. Goalpura

              2. Mizo

<u>Uttar Pradesh</u>

        1. Basti

        2. Fatehpur

        3. Hamirpur

        4. Chamauli

        5. Pitteragarh

        6. Tehri Garwhal

        7. Almora.

<u>Gujarat</u>   1. Banaskata

<u>Bihar</u>   1. Saran

<u>Himachal Pradesh</u>

        1. Mandi

        2. Kangra

        3. Mahasu

Typology B 2

  (2,3)

  (2,4)

  (2,5)

<u>State</u>

  <u>Uttar Pradesh</u>

        1. Bijnore

  <u>West Bengal</u>

        1. Malda

        2. Jalpaiguri

  <u>Orissa</u>   1. Mayurbhanj

        2. Kalahandi

        3. Dhenkanal

  <u>Maharashtra</u>

        1. Yeotmal

        2. Bhandra

  <u>Gujarat</u>

        1. Amreli

Table III.# 5   - 2 -

Typology B 3
 (6,1,   )
 (6,5,   )
 State
 Maharashtra
      1. Sangli
      2. Kolaba
      3. Kolhapur
      4. Nagpur
      5. Nasik
      6. Ratnagiri

Uttar Pradesh
      1. Agra
      2. Pratapgarh
      3. Sultanpur
      4. Bulandshahr
      5. Faizabad
      6. Jhansi

Himachal Pradesh
      1. Bilaspur
Jammu & Kashmir
      1. Kathua
      2. Anantnag
Gujarat
      1. Sundernagar
Bihar
      1. Ranchi
Punjab
      1. Rupar
      2. Jullundur
      3. Kapurthala
      4. Patiala
      5. Bhatinda
      6. Sangrur

West Bengal
      1. West Dinajpur

Assam
      1. Kamrup
Haryana
      1. Jind

Typology B 4
 (6, 7)
State
 Maharashtra
      1. Aurangabad
      2. Buldana
Uttar Pradesh
      1. Azamgarh
      2. Nanital
      3. Jaunpur
      4. Jalaun
      5. Unnao
Himachal Pradesh
      1. Simla
      2. Chamba
Jammu & Kashmir
      1. Poonch
      2. Rajouri
      3. Srinagar
      4. Udampur
Bihar   1. Shahbad
      2. Champaran
      3. Darbhanga
Orissa   1. Balasore
W.Bengal 1. Darjeeling

Typology B 5
 (2,7   )
State
    Bihar 1. Muzaffarpur
       2. Saharsa
 Uttar Pradesh
      1. Bahraich
 Maharashtra
      1. Amravati
      2. Chandrapur

Table III. # 5   - 3 -

Typology C 1

(6,2,1)
(6,2,3)
(6,2,4)
(2,6,4)
(2,6,3)

State

Bihar	- 1.	Dhanbad
W. Bengal	1.	Calcutta
	2.	Howrah
	3.	Hooghly
	4.	Midnapore

Haryana

1. Rohtak

Orissa	1.	Cuttack
	2.	Bolangir
	3.	Sambalpur

Typology C 2

(6,2,5)
(2 ,6,5)

State

Punjab	1.	Hoshiarpur
	2.	Ferozepur
	3.	Amritsar

W. Bengal

1. 24 Parganas
2. Birbhum
3. Murshidabad
4. Bankura
5. Cooch Behar
6. Purlia

Haryana

1. Gurgaon
2. Hissar

Typology C 3

(6,2,7)
(2,6,7)

State

Bihar

1. Patna
2. Monghyr
3. Bhagalpur
4. Purnea
5. Gaya
6. Parganas
7. Palamal
8. Hazaribagh

Punjab

1. Gurdaspur
2. Ludhiana
3. Mahendragarh

West Bengal

1. Nadia
2. Burdwan

Assam

1. Nawgong

Orissa

1. Sundargarh
2. Ganjam
3. Puri
4. Koraput
5. Bond-Khandmal

derived by summing up the differences of the district level and All-India occupational structures after ignoring the sign of differences. Thus the co-efficients of standardised occupational deviations help to determine the relative ordering of absolute deviations of district occupational structure from the All-India structure. These co-efficients cannot indicate whether the deviation of a district from the All-India one in respect of any occupational division is in a positive or a negative direction. A high ranking of co-efficient of standardised deviation for a particular occupational deviation could be on account of that occupational division occupying a much more prominent position in the district concerned than in the All-India occupational structure, as also on account of that occupational division occupying a far less important position in the district than in the country as a whole.

If one is interested in the direction of deviation as well, one would have to postulate an alternative measure. One such measure which would be akin to the co-efficient of standardised occupational deviations, while taking account of the above point, could be derived by obtaining occupational division level aggregation of differences in occupational percentages at the two digit level but after keeping the sign of differences in view. The rest of the procedure would be similar to that for deriving the co-efficient of standardised occupational deviations, i.e., the divisional aggregates would have to be divided by the percentage of working force engaged in respective occupational divisions.

In order to distinguish this measure from the former one, it may be called the co-efficient of standardised occupational

differences. Symbollically it would be similar to the expression given in equation (2), section III.2, except that in the numerator the summation would be over the actual and not absolute value of differences.

As may be observed from equation (2), in the numerator the All-India percentage of occupations is to be substracted from the corresponding district occupational percentages. Thus a co-efficient with a positive sign would indicate the greater prominence of that occupational group in the district than in the country as a whole, and vice-versa for a negative co-efficient. Once this set of co-efficients is available, the procedure for classification based on ranking would be identical to that delineated earlier. The only difference would be that in a majority of cases the lowest rank would now go to co-efficients with a negative value. Occupational typologies based on this co-efficient would also be tried out subsequently when occupational data for all districts of India have been fully processed.

III.5   An Analysis of the Feasible District
         Course Structures

We now come to the task which forms one of the
major objectives of this report, viz., delineation of
vocational-academic course structure for different regions
of India at the district level. The procedure outlined
in the last chapter and illustrated with reference to
Gurgaon has been applied to almost all districts of India.
The final stage of the procedure has been completed for
districts in a few states only as yet, but they belong to
a wide range of occupational typologies and are sufficiently
large in number to yield some broad conclusions. Table III.7
which is parallel to table II.7 for Gurgaon, gives district-
wise proportion of students who may be assigned to different
vocational and academic courses on the basis of 1971 occupa-
tional structure.[1/] Using the Third Educational Survey data
regarding the number of students, with the help of equation
of chapter II, page   , the cut off point corresponding to a
minimum intake capacity of 30 students per vocational course
has been estimated for the rural and urban sector of each
district and these cut off points are also given at the bottom
of each column in table III.7. Those courses whose propor-
tions lie above the cut off proportion for any district fall
in the category of feasible vocational courses for that
district and an asterisk sign has been placed against these
courses in table III.7.

Instead of giving the list of feasible rural and
urban courses separately for each district, we have arranged
the feasible courses in the form of a matrix in table III.8,

1/ In view of its length for each district, the information
    is not reproduced in this table for all districts. In
    the final report this table shall be given for all districts

for in this way it is easier to comprehend the overall picture of the vocational courses which emerge as feasible for districts belonging to different regions of India. In ██████ table III.8 the numbers given in the first row indicate code numbers of the different vocational courses, according to the list given in table II.7, page   . The crosses placed in the subsequent rows indicate the courses which emerge as feasible in the rural and urban areas of the different districts, whose names appear in the first column. For example, in the district Surat of Gujarat, in the rural sector the feasible occupation specific vocational courses (OSVC) are course numbers 2,4,5,8,9,11,16,17,22, 24 & 36 and the feasible Core Vocational Courses (CVC) are 40 to 43 and 45 to 49.

The four basic determinants of whether a course appears in the feasible list or does not, are :

(a) the population of a district and its
    rural-urban breakup.

(b) the proportion of students in the relevant
    age group who are studying in classes IX & X.
    It is these two factors taken together which
    are reflected in the districtwise number of
    students in classes IX & X, as given in the
    Third Educational Survey.

(c) the percentage of district working force
    engaged in an occupation as revealed by
    occupational structure tables of type II.5
    for Gurgaon. Such tables are, however, not
    appended here for the other districts.

(d) the occupational-vocational linkage scheme
    as portrayed by table II.6.

A glance at table III.8 brings out some basic points, which are discussed below

| Vocation Code as given in table II.7 | Maharashtra | | | Haryana | | | |
	A Rural	Osmanabad Rural	Urban	Mahendragarh Rural	Urban	Karnal Rural	Urban
Occupation Specific Vocational Courses (OSVC)							
1	–	5.46	1.67	.24	–	–	.29
2	.9	1.36	.68	.34	.56	1.47	1.13
3.	.4	.49	3.04	.55	1.65	.18	1.79
4	1.9	1.61	2.26	.74	2.16	1.01	1.59
5	31.8	59.64	20.56	45.43	15.44	23.85	6.79
6	–	1.23	.92	.99	.48	2.11	2.63
7	.1	.24	.53	–	1.44	.37	.53
8	13.7	1.24	18.13	5.99	23.15	14.58	24.33
9	3.5	2.48	.30	.25	.48	2.66	1.15
10	–	7.33	23.36	–	–	.09	–
11	9.1	4.95	5.68	5.12	21.61	8.62	22.72
12	–	1.18	.18	–	.36	–	.33
13	.7	2.70	.64	.37	1.59	1.84	1.43
14	–	–	–	.25	.48	.09	.04
15	.7	–	–	–	–	–	.16
16	–	.11	–	–	–	–	–
17	2.0	.11	.33	–	–	.28	1.80
18	.1	–	.07	.49	.24	.37	.29
19	.5	.34	.25	.37	.75	1.84	1.02
20	2.0	.54	.07	.49	.48	.92	.69

Vocation Code as given in table II.7	Maharashtra				Haryana			
	Nagpur Rural	Urban	Osmanabad Rural	Urban	Mahendragarh Rural	Urban	Karnal Rural	Urban
32		.50	--	.29	.25	.48	.82	1.76
33		.05	--	--	.25	--	--	--
34	8	.28	.11	.22	--	--	--	.12
35		--	--	--	--	--	.09	--
36	4 7	5.12	1.87	2.05	1.23	6.48	6.88	8.18
37	7	.07	--	.07	.25	--	2.57	9.33
38		.05	--	.02	--	--	.02	.05
39		.05	--	.02	--	--	.02	.05
Core Vocational Courses (CVC) 40	7 1	4.63	3.32	3.74	.75	3.34	3.92	4.73
41	1 3	3.12	.27	.95	.25	.96	.93	.81
42	5 8	2.83	2.41	2.65	.84	6.46	8.05	6.94
43	11 3	24.66	14.48	44.58	4.44	29.26	12.47	33.12
44	1 6	.07	.11	.44	.74	1.15	.09	.90
45	1 7	35.83	1.24	18.13	5.92	21.11	14.49	23.88
46	4 4	1.77	2.59	2.07	.75	.96	2.75	1.51
47	6	2.63	.99	2.37	.74	4.75	4.12	2.95
48	1 9	.23	.23	.03	--	.72	.64	.73
49	2 9	.75	.11	.33	--	--	.28	1.80
50		--	--	--	--	--	--	--
51		--	--	.07	--	--	.18	.12
Academic Courses 52	45 8	26.03	75.33	39.66	85.68	31.04	50.54	21.70

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TABLE III 8 APPEARS AT THE END
OF THIS REPORT.

III.5 (a)   'Region Neutral' Vocational Courses

=   It had been envisaged that from a regional point
of view courses which emerge as feasible ones would
perhaps fall into two broad type of categories and this
is borne out by table III.8. It may be observed from
this table that some vocational courses tend to appear
as feasible ones in almost all or a very high percentage
of districts. These are some basic vocational courses
likely to be needed almost everywhere irrespective of
variations in the natural resource base or the structure
of different districts. These fall mainly in the Core
Vocational Course (CVC) list but also in the OSVC list.
Vocational Courses, which appear in the feasible list for
over three fourth of districts, either in their rural
or urban sectors, are being defined as region neutral
vocational courses for the purposes of this study. Pro-
ceeding on the basis of this definition, the following
vocational courses could be classified as region neutral
vocational courses:

OSVC

1. Course No. 5: Teachers' Training for Nursery and
                   Lower Level Classes.

2. Course No. 8: Special Language Course

3. Course No.11: Salesmanship and Marketing

4. Course No.22: Commercial Arithmetic

5. Course No.36: Mechanical and Electrical Workshops

CVC

1. Course No. 40: Introductory Mechanical Engineering.

2. Course No. 42: Introductory Electrical Engineering

3. Course No. 43: Basic Commerce Course

4. Course No. 45: Secretarial Practice Course

5. Course No. 46: Basic Agricultural Course

6. Course No. 47: Home Science

It may be pointed out that among the core
Vocational Course, Course No. 41 dealing with Introductory
Civil Engineering Course, unlike its brother courses on
Introductory Mechanical and Electrical Engineering, does
not appear widely in the feasible list and hence is
absent from the list of region neutral courses. Also
two of the core courses, viz., Basic Agricultural Course
(No. 46) & Home Science Course (No. 47), although contained
in the above list, do not appear as frequently in the
feasible list as the other courses belonging to the above
list. On the other hand, para-medical course (No. 4), is
a near contender for inclusion in the above list, though
it does not qualify strictly on the basis of the criterion
enunciated above.

It also needs to be pointed out that courses
in the region neutral group are not equally wide-spread
is all parts of the country. For example, in the
hilly districts, of Jammu & Kashmir and Uttar Pradesh,
many of the region neutral courses are hardly to be found
in the feasible list, with the exception of course numbers
5,8,11 & 45, which are almost ever present in the feasible
list.

III.5 (b) 'Region Specific' Vocational Courses

In contrast to the above list, there are courses
which are found to be more prominent in districts of some
states than in other states. These other courses may be
categorised as region specific courses reflecting some

special features of a district in terms of its occupational structure or dominant economic activities. Quite often, within the feasible list, these courses do not necessarily gravitate towards any specific region or state, but are sparsely and randomly distributed among the districts. For example, course number 2 (Construction Technology), 3 (Engineering Assistants Course) and 4 (Para Medical Courses) are to be found concentrated among districts in the feasible list for Maharashtra and Gujarat. But these courses are not absent from the feasible list for the other states, theough they occur there in a much more thinly dispersed manner.

We may now take a fleeting glance at the spatial distribution of some of the other region specific courses which appear in the feasible list for different districts. Course No. 7 dealing with Telecommunications occurs primarily in the feasible list for large urban centres only. Course number 9 for Block Level Workers and number 13 regarding Food & Nutrition occur in the list for a number of districts in each of the states for which final results are available till now. Course No. 14 dealing with Forestry is to be found mainly in the list for hill districts of Jammu & Kashmir and Himachal Pradesh. It is conspicuous by its absence from the list for hill districts of U.P., perhaps partly reflecting the great inundation of forests in that region. Course No. 12 dealing with Hoteling and Catering does appear in the list for Greater Bombay but it also appears three or four times in the list for rural areas of districts like Osmanabad or Sabarkantha, which shows that the vocation identification procedure

used here can sometimes yield funny results. Metal
Processing Course (No. 15) has up till now occured only
in the feasible list for Mirzapur, Nasik, Thana, Greater
Bombay and Handol. Course No. 17 dealing with Textile
Designing, as may be expected, appears quite frequently
in the feasible lists for districts of Gujarat and a few
times in Maharashtra and Uttar Pradesh. Leather Techno-
logy Course (No. 18) appears in the feasible list for two
well known leather centres, viz., Kanpur and Agra, and
for two other districts, viz., Ghazipur and Gurgaon.
Courses 19, 20, 24 & 27 occur in a thinly scattered manner,
but in almost all the states.

III.5 (c)   "Regional Common Markets for Vocational Courses"

While we have commented upon the spatial distri-
bution of some of the region specific vocational courses,
there are quite a few vocational courses which cater to
occupations engaging a small proportion of the working
force but generally fall below the cut off point and hence
fail to appear in the feasible list for most of the
districts. Examples of such courses are course No. 10 for
Typewriter and Duplicator Mechanics, Course No. 16 dealing
with Wood Technology, Course No. 21 regarding Automobiles,
Course No. 25 about Radio & T.V., number 27 about Plumbing,
number 51 relating to Electronics, etc. The absence of
these courses from the feasible list does not by any means
indicate lack of their social usefulness. Some of them
like those dealing with Radios and Plumbing are likely to
be in demand in a majority of urban areas. Most of these
courses appear to be absent from the feasible list mainly
on account of their being uneconomic for provision on a

districtwise basis. In the case none of these courses
it is worth planning for their provision by pooling
together the resources of a group of neighbouring districts.
In this manner a vocational course which lies below the
cut off point for each district considered separately,
would become feasible when the requirements of a set of
districts are considered jointly along the lines of a
common market for goods. When the final results for
all states become available, it is intended to try this
exercise by aggregating the results for sets of neighbouring
districts and identifying courses which can attain the
minimum feasibility requirement of 30 students through
this process of district level pooling.

III.6 (d)   Academic-Vocational Course Distribution

One of the bye-products of the methodology of
course identification used here is the break up between
vocational and academic courses which we obtain for the
rural and urban sectors of each district. Table II.6,
which links occupations with different educational courses,
includes within its umbrella the academic courses as
well, since for a number of occupations they form an
integral part of the educative process. Thus, while
transforming occupational structure to an educational
course structure, we derive the proportion of students
who shall take various vocational as also academic courses.
It may be pointed out, however, that the sum of percentages
for all vocational and academic courses would not be
expected to add up to one hundred per cent, as there is
no one to one correspondence between courses and occupa-
tions and hence students could be taking courses from

more than a single set.

The percentage of students who may take up academic courses, derived on the basis of the vocational courses formulation procedure used here, are given in table III.9 for the different districts. Two points about it are worth noting. First, that occupational structure in rural and urban areas appears to be such that in case the occupation-education linkage of table II.6 is utilised, the percentage of students needing to take up academic courses would be much higher in rural than in the urban areas. It is in urban areas that vocational bias in education comes out to be more imperative. However, it has to be borne in mind that these educational course structures are derived from occupational structure of the working force, whereas the educational sector has to cater for education of those also who would not join the working force. In this study we have been concerned mainly with investment aspects of education, since the aim has been to derive courses for manpower going to be employed in directly or indirectly productive activities. But considering the fact that a certain proportion of those educated, particularly among the females, do not join the labour force but treat education as a consumption good and hence may not be included to take up vocational courses, the rural and urban percentages given in table III.9 may not be conveying a very accurate picture of the proportion of students who should take up academic courses. The proportions would change if one takes an overall view concerning

Table III.9 : Proportions of Students
estimated for Academic Courses

District	Rural % age	Urban % age

State
    Gujarat

District	Rural	Urban
1. Mehsana	50.92	19.59
2. Gandhi Nagar	23.15	13.19
3. Bhavnagar	52.47	16.98
4. Jam Nagar	77.60	29.55
5. Bharuch	7.11	23.16
6. Panch Mahal	55.71	21.71
7. Kutch	64.27	23.55
8. Ahmedabad	45.12	16.79
9. Volsud	52.50	13.20
10. Baroda	47.37	17.91
11. Bansakantha	47.07	20.88
12. Aomroli	73.21	26.44
13. Surat	48.86	14.91
14. Surendar Nagar	64.46	20.68
15. Ahmedabad	45.12	16.79
16. Rajkot	12.05	17.60
17. Safarkanta	12.77	10.64
18. Dangas	37.32	-
19. Kheda	40.67	21.17

JAMMU & KASHMIR

District	Rural	Urban
1. Punch	69.85	32.14
2. Jammu	50.34	19.19
3. Anantnag	44.74	40.90

Table III.9   - 2 -

District	Rural % age	Urban % age
4. Kathua	53.45	37.53
5. Srinagar	55.95	24.20
6. Ladakh	85.31	26.89
7. Udhampur	53.47	31.33
8. Rajouri	62.30	32.62
9. Baramulla	59.59	39.16
10. Doda	72.49	36.01

HARYANA

1. Mahendargarh	85.68	31.04
2. Karnal	50.54	21.70
3. Ambala	42.78	21.53
4. Rohtak	57.23	27.92
5. Jind	65.21	23.77
6. Hissar	56.57	10.51

HIMACHAL PRADESH 56.07 28.11

1. Bilaspur	68.20	14.84

UTTAR PRADESH

1. Gharwal	43.42	19.19
2. Nanital	37.62	24.28
3. Uttar Kashi	42.01	9.09
4. Tehri Gharwal	56.54	27.56
5. Pauri Gharwal	56.42	15.23
6. Chamuli	59.36	21.39
7. Agra	51.26	25.95
8. Baharich	59.37	27.06
9. Kanpur	56.29	27.82
10. Lucknow	51.95	17.93

Table III.9   - 3 -

	District	Rural % age	Urban % age
11.	Ghazipur	46.11	30.40
12.	Shahjahanpur	50.05	23.36
13.	Sultanpur	54.39	27.14
14.	Mirzapur	27.55	22.53
15.	Jhansi	58.93	26.21
16.	Ledun	91.76	17.45
17.	Meerut	50.07	--
18.	Hardoi	57.19	28.93
19.	Dehradun	41.92	25.37
20.	Jaunpur	58.23	25.74

MAHARASHTRA

1.	Ahmed Nagar	82.69	36.33
2.	Bhandhara	62.86	30.93
3.	Bhir	25.18	27.36
4.	Bhuldona	67.30	26.27
5.	Chandarpur	56.32	22.61
6.	Greater Bombay	--	20.76
7.	Wardha	57.54	25.31
8.	Thana	31.26	19.93
9.	Kolahapur	53.16	27.97
10.	Nasik	33.33	31.68
11.	Nagpur	60.98	26.03
12.	Kolaba	52.28	30.88
13.	Parbhani	74.05	29.52
14.	Nanded	60.96	25.81
15.	Osmanabad	75.33	39.66
16.	Jalgaon	46.15	20.96
17.	Akola	57.18	25.28
18.	Amaravati	63.20	35.76

education not only for the world of occupations but also for that segment of the world which acquires education simply for the sake of education and culture, in order to sustain the district level occupations.

Secondly, even if we make allowance for a certain proportion of those being educated who shall not join the labour force, there is nothing in the table to warrant the suggestion or the expectation that roughly 50% students should take to the vocational and 50% to the academic courses. The suggested proportions in this table vary widely and sometimes deviate significantly from the 50% norm and would not necessarily converge towards 50% if consumption aspect of education is also included explicitly.

III.5 (e) <u>Rural-Urban Pattern of Feasible Courses</u>

It is of interest to observe the districtwise distribution of the number of courses which appear in the feasible list. The total number of feasible courses for each district is given in the last, i.e. fifty third column of table III.8. Two points need to be noted about their pattern of distribution. First, there appears to be a systematic relationship between the number of courses appearing in the feasible list for each district and their respective levels of development. The composite level of development of each district has been taken from M.N. Pal's paper[1] who has classified the districts into

1/ M.N. Pal, "Regional Disparities in the Level of Development in India", Indian Journal of Regional Science, Vol. VII, No.1, 1975.

the following six categories of development:

VL: Very Low   L: Low   M: Medium

H: High   VH: Very High   EH: Extremely High

The relevant symbols have been placed below
the name of each district in column 1 of table III.8,
to indicate the level of development of the respective
districts. Broadly speaking, the number of feasible
courses appearing against the high development categories
like EH & VH, is greater than that in M & L categories.
For example, in districts like Ahmedabad (R=13; U=32),
Greater Bombay (U=42), Nagpur (R=14; U=28), Meerut (R=24),
Lucknow (R=12;U=20) etc., the number of feasible courses
is much higher than that in lower or medium development
category districts like Bahraich (R=8;U=9), Chamauli
(R=10; U=2), Ghazipur (R=15;U=7), Banas Kantha (R=7;U=6),etc

Secondly, the rural-urban distribution of feasible
courses also appears to be closely associated with the
level of development of the districts. As a general rule,
in the more developed districts, the number of feasible
courses comes out to be higher in their urban segments
than in the rural ones, while the position is the reverse
in the low development category. This is in fact a
reflection of relationship between the level of development
and the number of feasible courses pointed out above.
If these two variables are related in a positive direction,
one would expect development to result in gravitation of
feasible vocational courses towards the urban areas, for
urbanisation and the level of development are also
positively related.

Moreover, one would have to be cautious in drawing any policy conclusions regarding the rural-urban allocation of in-take of students into various vocational courses on the basis of table III.8, for the list of feasible courses in the rural and urban areas has been derived on the basis of the gravitational pull of the existing number of workers in various occupations in the rural and urban areas. Although the endeavour should be to provide courses in areas where demand for them is likely to exist, but from the point of view of amenities available in the educational sector, and also from the point of view of the future growth potential, in the case of many vocational courses it may be found to be easier to institute new courses in schools located in urban rather than in the rural areas. Thus the supply pattern of vocational education may have to deviate from the rural-urban demand pattern as revealed by the rural-urban proportion of feasible courses for various districts indicated by table III.8.

Lastly, it is imperative to add a word of caution regarding quantitative implications of the results derived in this study. By applying proportions given in tables of type II.7 & III.7 to the number of new entrants expected at the plus two stage, in different districts, one can derive absolute magnitudes of the number of students for which capacity must be provided in the different vocational courses. However, a reliance upon such quantitative magnitudes would not be very advisable, for these magnitudes would have been derived from 1971 Census data and even in 1971 Census data the reliability of occupational classification in terms of finer categories may not be as high as

one would like it to be. Secondly, our analysis has been in terms of two digit level occupational groups, which may be too broad for yielding very accurate magnitudes in terms of student in-take into specific vocational courses. Thirdly, the end results are also sensitive to occupation - vocation interlinkages mapped out in table II.6. A finer classification of these in terms of narrower occupation groups should theoretically have been superior, but data and computational problems would have been magnified manifold. Finer occupational categorisation is conceptually more sound, but on the other side of the balance is the fact that reliability of data for finer classifications goes on decreasing.

In the light of these points, it is worth asserting that the reliability of feasible course list for districts as presented in table III.8, is expected to be more than that of quantitative magnitudes implicit in vocational course structure tables. It also goes without saying that the total number of feasible vocational courses indicated against each district would have to be introduced in a phased manner, if and when the start is made. One cannot envisage a frontal attack on the entire feasible list in one go. It would be more appropriate to make a start with the core vocational list and gradually diversify the range of occupation specific vocational courses (OSVC), always keeping in mind the fact that there should be no duplication of those courses for which I.T.I. and other vocational institutions in the district offer adequate capacity. In the subsequent portions of this study we try to see the extent to which some of the limitations mentioned above can be remedied.

CHAPTER IV

THE TREND OF OCCUPATIONAL CHANGE
AND ITS VOCATIONAL IMPLICATIONS

As pointed out earlier, it is imperative to check upon the results of district level vocation identification derived through the methodology outlined previously by analysing the trends in the pattern of occupational change. Occupational structure does not remain static and, to the extent possible, our endeavour should be to try to relate vocational courses not simply to the 1971 Census occupational structure but to the occupational structure likely to exist by the time the first batch of plus two students qualifies. It is conceivable that results via the procedure of 1971 occupational structure and that based on projection of the trends may not differ substantially; but it is worthwhile to assess differences, if any, in results obtained via the two procedures.

With this end in view, in this Chapter we have adopted two approaches in order to take account of the influence of growing, stagnant and decaying occupations on the vocational course structure. Both the approaches are based on extrapolation, in some way, of the trends observed during 1961-71. The first approach, which is the simpler one, is based on identifying occupations which improved their position in the proportionate occupational structure, those which retained roughly the same position and those which slumped during 1961-71. Assuming that the same trends would roughly continue over the next decade, we have assessed the impact of the growing, stagnant and decaying occupations on the various vocational courses on the basis

of the occupational-education linkage table II.6 and have
indicated courses demand for which is likely to good. In
the second approach we attempt to project an occupational
structure for the late seventies in quantitative terms on
the basis of the 1971 Census as the base and 1961-71 occu-
pational change. This modified occupational structure is
then translated into a vocational-academic course structure
with the help of table II.7 using the same procedure as
outlined in Chapter II. On account of the cumbersome steps
involved in this procedure, it is tried on an experimental
basis for Gurgaon only, in order to see as to how far the
results of section II.7 of Chapter II differ from that
derived through this method. For the present the first
approach is also tried for three districts, but it is
intended to broad base it by covering a few districts from
each occupational typology. The end results of the second
approach do not appear to be too rewarding to warrant its
repetition.

IV.1 (a)   Growing, Stagnant and Decaying Occupations

       Let us make a start with the first approach. The
basic secondary sources for computing the trend of occupa-
tional change at the district level, as in case of earlier
work, are the Population Censuses of 1961 & 1971. But at
the outset one encounters a basic difficulty in making use
of these data. It arises from the fact that the occupational
classifications used in 1961 and 1971 are not similar - the
1961 Census occupational classification was based on NCO
Code of 1958 while that of 1971 was based on 1968 NOC Code.
The 1968 NCO Code does indicate the manner in which 1958
and 1968 occupational classifications can be made comparable
by clubbing togetherwith certain two and three digit level

occupational groups, but some of the smaller three digit
occupational categories were non-existent in 1958 NCO Code.
However, using these guidelines, occupational data were
derived for 1961 and 1971 at the All-India level and, for the
present, for three districts of Haryana. The data thus
obtained may be considered to be broadly comparable between
1961 & 1971 in terms of the two digit level occupational
groups of 1961 Census. Comparability at one digit occupa-
tional division level, which would have made it easier to
comprehend the broad direction of occupational changes in
terms of 8 or 9 basic categories, has not been possible
possible for some of the two and three digit level occupationa:
groups according to 1958 and 1968 N.C.Os are classified
among different one digit level occupational divisions and
the total number of occupational groups had been increased
in 1968 N.C.O compared to the 1958 N.C.O.

The trend of occupational change between 1961 & 1971
can be studied in two alternative ways. One is to work out
percentage change in the absolute number of workers engaged
in each two digit level occupational group in 1961 & 1971.
The other method is to work out the percentage occupational
structure of working force in 1961 & 1971 and then compare
the two or work out the rate of change in the percentage of
manpower occupied in each two digit level group in 1961 and
1971. The percentage changes calculated by the first method
reveal composite effect of change (which may be in the
upward or downward direction) in total working force over
the time period as well as of the rate of change in the
proportion of working force engaged in each occupational
group. Since our focus of attention is on proportional
occupational structure, it is the second method of studying

occupational change which underlies both the approaches
experimented with in this chapter. Moreover, in the light
of definitional changes in work force in the Census of 1961
and 1971, estimation of changes in the absolute number of
workers engaged in any occupational group would not have
been very meaningful, particularly when male and female
workers are being aggregated together. This is so because
the definitional changes are supposed to have affected
primarily the occupational classification of female workers.

IV.1 (b)   The All-India Pattern of Change

We may first have a look at the All-India pattern of
occupational change during 1961-71. For this purpose table
IV.1 gives the percentage of working force employed in
each two digit level occupational group(of NCO 1958 Code)
in 1961 and 1971 as well as the rate of change in the
percentage form for each category over this time period
(column 4). Column (4) has been derived by substracting
column (3) from column (2), dividing the difference by
column (2) and multiplying it by 100. Table IV.2 gives the
description of each 2 digit level occupational group of NCO
1958, used in table IV.1 and other tables making use of
1961 Census occupational data. A look at column (4) of
this table brings out second basic difficulty in interpreting
occupational change as revealed by the Censuses of 1961 & 1971
As may be observed from this column, the changes in propor-
tional occupational structure at two digit level are quite
substantial ranging from -100% to over 1000% with quite a
large number of changes falling in the range of - 25% to
200%. It appears that these violent changes are not a true
reflection of the occupational changes which actually took
place during 1961-71, for it is inconceivable that such

substantial changes spread over a large number of occupations could have come about within the span of a decade. These somewhat erractic magnitudes are in all probability primarily the result of vagaries of occupation especially in the case of female workers, identification by the Census investigations, and partly of changes in the definition of work force, although the difficulties arising on account of definitional changes should get reduced in the light of our decision not to study change in absolute magnitudes, but only in proportionate magnitudes. To some extent they might also be caused by change over from the NCO Code of 1958 to the 1968 Code and the difficulty of their precise comparison, in spite of the conversion table given in the 1968 N.C.O Code.

These difficulties vitiate the reliability of occupational trend analysis, but we decided to make an attempt at deriving some meaningful results. To get over the difficulties enumerated above, it has been assumed that although the exact magnitude of rates of change in the occupational percentages may not be very meaningful, yet they can convey a broad idea of the direction of change and the relative strength of change for various occupational categories. This assumption can no doubt be questioned, but under the circumstances, it appears to provide the best way of making an attempt to analyse occupational change. Thus, proceeding on the basis of this assumption, we have classified rates of change of over +200% in column (4) of table IV.1 as indicating very fast growing occupations and those between +50% to +200% as moderately fast growing occupations. Within the range of +50% to -25%, it has been assumed that the magnitude is not sufficiently large to warrant any conclusion about the direction of change. The ranges - 25% to

-50% and -50% to -100% are treated as indicating moderately
declining and fast declining occupations. Using this
classification, table IV.3 lists the occupations which fall
in each category of occupational change. Since the pattern
of change has been worked out separately for rural and urban
sectors, against the occupations which fall in each of these
five categories it is indicated whether it is the rural or
urban components of the occupational groups which fall within
any specific range. Code numbers pertain to the 1958 NCO
Code.

If we read table IV.3 together with tables IV.1 and
IV.2, the following occupational groups appear to be the
clearly growing ones, both in the rural and urban areas.
Either the rural or urban component of the following occu-
pations fall in above +50% classification in terms of col. (4)
of table IV.1 :

1. Physicians, Surgeons and Dentists
2. Teachers
3. Jurists
4. Draughtsmen, Science and Engineering
   Technicians.
5. Directors & Managers, Wholesale & Retail Trade.
6. Directors & Managers & Working Proprietors,
   Financial Institutions.
7. Book-Keepers & Cashiers.
8. Office Machine Operators
9.
10. Drivers & Firemen, Railway Engine
11. Telephone, Telegraph & Related Telecommunication
    Operators.
12. Postmen & Messengers.
13. Mechanic, Typewriter & Calculating Machine.
14. Electricians and Related Electrical &
    Electronics Workers.
15. Painters and Paper Hangers
16. Chemical & Related Process Workers.

17. Testers, Packers, Sorters & Related Workers.

18. Fire Fighters, Policemen, Guards and Related Workers.

19. Building Caretakers, Cleaners and Related Workers.

20. Photographers and Related Camera Operators.

21. Service, Sport and Recreation Workers, n.e.c.

At the other end are the following occupational groups, which appear to reveal a declining trend both in the rural and urban areas, with either the urban or rural component falling in below -25% range in terms of col. (4) of table IV.1:

1. Chemists, Physicists, Geologists and other Physical Scientists

2. Artists, Writers & Related Workers.

3. Directors, Managers & Working Proprietors, Others.

4.

5.

6. Spinners, Weavers, Knitters, Dyers and Related Workers.

7. Furnacemen, Rollers, Drawers, Moulders and Related Metal Making & Treating Workers.

8. Millers, Bakers, Brewmasters and Related Food & Beverage Workers.

9. Labourers, n.e.c.

Then there is the ambiguous category of occupations in which rural and urban percentages move in opposite directions, with atleast one of them falling above +50% or below -25% range. In their case it cannot be clearly claimed whether the occupation as a whole has shown a tendency towards growth or decay. The opposite trends in rural and urban sectors could be reflecting a tendency for occupations to shift from one environment to the other, but it may also be merely a consequence of abberations associated

with identification of occupations by the Census Investi-
gators. The occupational groups in this category are not
many and are listed below :-

1. Nurses, Pharmacists and Other
   Medical and Health Technicians.

2. Social Scientists and related workers.

3. Administrators and Executive Officials,
   Government.

4.

5. Desk Officers, Engineers, Officers &
   Pilot, Ships.

6. Tool Makers, Mechinists, Plumbers, Welders,
   Platers and Related workers.

The remaining two digit level occupational code groups
belonging to the -25% to +50% range both in case of urban
and rural areas and, therefore, according to the assumptions
outlined previously, nothing definite can be concluded about
the trend of change in their case during the 1960's.

IV.1 (c)   Occupational Change in Gurgaon, Karnal &
            Mahendragarh

We may now shift our attention from the All-India
pattern of occupational change during the sixties to the
pattern of change in the case of Gurgaon and, for comparative
purposes, a two other districts of Haryana - one a well
developed district, Karnal, and the other a backward district,
Mahendragarh. Tables similar to table IV.3 for All-India
level giving code numbers of fast growing, moderately
growing, nearly constant, moderately declining and fast
declining occupations have been prepared for these three
districts (Table IV.6 - IV.7) and in addition, for Gurgaon
district, table IV.4 gives percentage occupational structure
during 1961 & 1971 and the rates of change in occupational
groups during 1961-71. One thing which appears to be
clearly evident from a comparison of district level and

Table IV.1 : All-India Pattern of Occupational
Change 1961-71

Division/Group NCO-1958 (1)		% age of Workers 1961 (2)	% age of Workers 1971 (3)	Rate of change of % age (4)	DVN/Group NCO-1958 (1)		% age of Workers 1961 (2)	% age of Workers 1971 (3)	Rate of change of % age (4)
All DVN -	R	100			09	R	.023	.177	669.57
	U	100				U	.221	.512	131.67
DVN-0	R	5.004			96,0X	R	.746	.796	6.70
	U	6.504				U	.718	.548	-23.65
GR. 00	R	.119			D-1	R			
	U	.437				U			
01	R	.062	.017	-72.58	G-10	R	1.541	2.640	71.32
	U	.072	.065	-9.72		U	2.151	1.205	-43.98
02	R	.040	.037	42.50	11	R	.032	.080	150.00
	U	.044	.035	-20.45		U	.218	.430	97.25
03	R	.356	.790	121.91	12	R	.013	.039	353.85
	U	.513	.750	46.20		U	.106	.109	2.83
04	R	.423	.646	52.72	13	R	.676	.128	-81.07
	U	.758	.722	-4.75		U	1.031	.239	-87.62
05	R	2.841	6.501	128.83	D-2	R	2.187		
	U	2.618	3.636	38.88		U	10.340		
06	R	.053	.106	100.00	20	R	.218	.348	59.63
	U	.345	.421	22.03		U	1.275	1.802	41.33
07	R	.072	.279	287.50	21,22	R	.071	.131	84.51
	U	.315	.155	-50.79		U	.574	.639	11.32
08	R	.272	.014	-94.85	28,29	R	2.543	3.325	30.75
	U	.426	.056	-86.85	66,69	U	9.494	8.195	-13.68

Table IV.1   - 2 -

DVN/ GROUP NCO-1958 (1)	% age of Workers 1961 (2)	% age of Workers 1971 (3)	Rate of change of % age (4)	DVN/ Group NCO-1958 (5)	% age of Workers 1961 (6)	% age of Workers 1971 (7)	Rate of change of % age (8)
DVN-3 R	9.610			DVN-5 R	1.617		
U	15.273			U	.529		
G-30 R	7.254	8.191	12.92	50,51 R	1.617	1.762	8.97
U	9.424	10.626	12.75	52,59 U	.529	.735	38.94
31 R	.070	.121	72.86	DVN-6 R	2.024		
U	.425	.480	12.94	U	5.016		
32,33 R	1.238	2.519	10.343	60,62 R	.004	.012	200.00
U	5.318	4.965	-6.64	U	.031	.024	-22.58
34 R	.048	.073	52.08	61,63 R	1.106	2.292	107.23
U	.106	.100	2.83	64 U	3.469	4.905	41.40
DVN-4 R	19.293			65 R	.024	.286	1091.67
U	2.567			U	.078	.362	364.10
G-40 R	6.116	.162	-97.35	67 R	.034	.060	76.47
U	.522	.055	-89.46	U	.200	.223	11.50
41 R	8.835	8.647	-2.13	68 R	.210	.448	113.33
U	1.401	1.072		U	.236	.261	10.59
42 R	.034	.35	-23.48	7-8 R	50.754		
U	.008	.004	-50.00	U	43.215		
43-R	1.352	1.781	31.73	70 R	8.892	5.604	-36.98
U	.477	.473	-.84	U	8.239	6.787	-17.62
44 R	.956	.790	-17.36	71 R	1.879	2.684	42.84
U	.159	.153	-3.77	U	2.412	2.566	6.38

Table IV.1   - 3 -

DVN/GROUP NO-1958 (1)	% age of Workers 1961 (2)	% age of Workers 1971 (3)	Rate of change of % age (4)	DVN/GROUP NO-1958 (1)	% age of Workers 1961 (2)	% age of Workers 1971 (3)	Rate of change of % age (4)
Gr. 72 R	1.462	1.331	-8.96	Gr. 83 R	.135	.187	38.52
U	.067	.374	-9.62	U	.237	.433	32.70
73 R	1.315	.197	-85.02	84 R	1.664	2.501	50.30
U	.979	.572	-41.57	U	1.593	1.399	-12.18
74 R	.916	1.084	18.34	85 R	3.072	2.585	-18.46
U	1.144	3.504	206.29	U	1.257	1.043	-17.02
75 R	.7837	1.857	134.61	86 R	.113	.636	462.83
U	3.818	1.818	-52.38	U	.440	2.184	396.36
76 R	.203	.770	279.31	87 R	.217	.343	58.06
U	.912	1.651	81.03	U	.578	.601	3.98
77 R	2.353	2.950	25.37	89 R	18.617	4.873	-73.82
U	1.726	1.726	-	U	12.738	4.673	-63.31
78 R	.045	.098	117.78	DVN 9 R	3.351		
U	.321	.377	17.45	U	11.642		
79 R	2.932	2.989	2.317	G. 90 R	1.241	2.070	66.80
U	2.172	2.639	21.50	U	2.742	3.032	10.58
80 R	.110	.142	29.09	91,92 R	1.912	1.958	2.41
U	.692	.739	6.03	U	4.750	3.685	-22.42
81 R	2.653	2.754	3.81	93 R	1.049	.806	-23.16
U	.922	.856	-7.16	U	1.938	1.875	- 3.25
82 R	3.990	2.970	-25.56				
U	2.063	1.778	-13.81				

Table IV.1   - 4 -

Division/ Group NCO-1958 (1)		Percentage of Workers 1961 (2)	Percentage of Workers 1971 (3)	Rate of change of Percentage (4)
Gr. 94	R	1.373	1.925	40.20
	U	.776	.724	-6.70
95	R	2.634	2.546	-3.34
	U	1.225	.981	-19.92
97	R	.010	.059	490.00
	U	.090	.152	68.89
99	R	.128	.400	212.50
	U	.107	.205	91.59
X	R	1.165	1.016	-12.79
	U	.129	1.820	310.85
X 8	R	.982	.395	-59.78
	U	.042	1.341	3092.86
X 9	R	.183	.622	239.89
	U	.087	.479	450.57

- - -

Table IV.2: National Classification of Occupations, 1958

Code No.		Description
Division	- 0	Professional, Technical and Related Workers
Group	- 00	Architects, Engineers and Surveyors.
"	- 01	Chemists, Physicists, Geologists and other Physical Scientists.
	02	Biologists, Veterinarians, Agronomists and Related Scientists.
	03	Physicians, Surgeons and Dentists
	04	Nurses, Pharmacists and other Medical and Health Technicians.
	05	Teachers.
	06	Jurists
	07	Social Scientists and Related Workers
	08	Artists, Writers and Related Workers
	09	Draughtsmen and Science and Engineering Technicians, n.e.c.
	0X	Other Professional, Technical and Related Workers.
Division	- 1	Administrative, Executive and Managerial Workers.
Group	- 10	Administrators and Executive Officials, Government
	11	Directors and Managers, Wholesale & Retail trade.
	12	Directors, Managers and Working Proprietors, Financial Institutions.
	13	Directors, Managers and Working Proprietors, Other
	14	
Division	- 2	Clerical and Related Workers
Group	- 20	Book-keepers and Cashiers.
	21	Stenographers and Typists
	22	Office Machine Operators
	28	Clerical Workers - Miscellaneous
	29	Unskilled Office Workers
Division	- 3	Sales Workers
Group	- 30	Working Proprietors, Wholesale and Retail Trade.
	31	Insurance and Real Estate Salesmen, Salesmen of Securities & Services, and Auctioneers.
	32	Commercial Travellers and Manufacturers' Agents.
	33	Salesmen, Shop Assistants and Related Workers.
	34	Money-lenders and Pawn-brokers.

Table IV.2   - 2 -

Code No.   Description

Division - 4   Farmers, Fishermen, Hunters, Loggers
                     and Related Workers

  Group -   40   Farmers and Farm Managers.

             41   Farm Workers

             42   Hunters and Related Workers

             43   Fishermen and Related Workers

             44   Loggers and other Forestry Workers

Division - 5   Miners, Quarrymen and Related Workers

  Group   50   Miners and Quarrymen.

             51   Well Drillers and Related Workers

             52   Mineral Treators

             59   Miners, Quarrymen and Related Workers, n.e.c.

Division - 6   Workers in Transport and Communication Occupation:

  Group   60   Deck Officers, Engineer Officers and Pilots, Ship

             61   Deck and Engine-room Ratings (Ship),
                     Barge Crews and Boatmen.

             62   Aircraft Pilots, Navigators and Flight Engineers.

             63   Drivers and Firemen, Railway Engine.

             64   Drivers, Road Transport

             65   Conductors, Guards and Brakesmen, Railways.

             66   Inspectors, Supervisors, Traffic Controller
                     and Despatchers, Transport.

             67   Telephone, Telegraph and Related Tele-
                     communication Operators.

             68.   Postmen and Messengers

             69   Workers in Transport and Communication
                     Occupations, n.e.c.

Division - 7-8   Craftsmen, Production Process Workers, and
                     Labourers, n.e.c.

  Group   70   Spinners, Weavers, Knitters, Dyers and
                     Related Workers.

             71   Tailors, Cutters, Carriers and Related Workers.

             72   Leather Cutters, Lasters and Sewers
                     (except Gloves and Garments) and Related Workers.

             73   Furnacemen, Rollers, Drawers, Moulder and
                     Related Metal Making and Treating Workers.

             74   Precision Instrument Makers, Watch Makers,
                     Jewellers and Related Workers.

             75   Tool-makers, Machinists, Plumbers, Welders,
                     Platers and Related Workers.

             76   Electricians and Related Electrical and
                     Electronic Workers

             77   Carpenters, Joiners, Cabinet Makers,
                     Coopers and Related Workers

             78   Painters, and Paper Hangers

             79   Brick-layers, Plasters and Construction

Table IV.2 — 3 —

Code No.		Description
Group	80	Compositors, Printers, Engravers, Book-binders and Related Workers.
	81	Potters, Kilnmen, Glass and Clay Formers and Related Workers.
	82	Millers, Bakers, Brew-masters and Related Food and Beverage Workers
	83	Chemical and Related Process Workers.
	84	Tobacco Preparers and Product Makers.
	85	Craftsmen and Production Process Workers, n.e.c.
	86	Testers, Packers, Sorters and Related Workers.
	87	Stationary Engine and Excavating and Lifting Equipment Operators and Related Workers.
	89	Labourers n.e.c.
Division — 9		Service, Sport and Recreation Workers
Group	90	Fire-Fighters, Policemen, Guards and Related Workers.
	91	House-keepers, Cooks, Maids and Related Workers.
	92	Waiters, Bartenders and Related Workers.
	93	Building Care-takers, Cleaners and Related Workers.
	94	Barbers, Hairdressers, Beauticians and Related Workers.
	95	Launderers, Dry-Cleaners and Pressers.
	96	Athletes, Sportsmen and Related Workers.
	97	Photographers and Related Camera Operators.
	99	Service, Sport and Recreation Workers, n.e.c.
Division — 10		Workers not Classifiable by Occupations
Group	X0	Workers without occupations
	X5	Workers reporting occupations, unidentifiable and un-classifiable
	X9	Workers not reporting occupations.

Table IV.3: Growing, Stagnant & Declining
Occupations

ALL - INDIA

Occupation Code

Fast Growing   -   07 R, 09 R, 12 R, 60 R, 65 R,

66 U, 74 U, 76 R, 86 R, 86 U,

97 R, 99 R

Moderately   -   03 R, 04 R, 05 R, 06 R, 09 R,
  growing

10 R, 11 R, 11 U, 20 R, 22 R,

31 R, 63 R, 32 R, 68 R, 75 R,

78 R, 67 R, 76 U, 83 U, 90 R,

97 U, 99 U

Declining   -   08 R, 08 U, 13 R, 13 U, 40 R,

40 U, 73 R, 89 R, 89 U.

Fast declining -   01 R, 07 U, 10 U, 42 U, 70 R,

73 U, 82 R.

the All-India tables is that at the micro-level the
number of occupational groups in the declining and growing
ranges is higher while that in the indeterminate range of
-25% to +50% is much lower then in the All-India case. The
number is particularly high in the declining range in the
districts of Gurgaon and Mahendragarh. The occupational
groups which show a pronounced tendency towards growth and
decline (i.e., fall above +50% or below -25%) both in the
rural and urban areas in these three districts, are listed
below :

Gurgaon District

Growing Occupations:

1. Teachers
2. Jurists
3. Stenographers & Typists
4. Office Machine Operators
5. Conductors, Guards & Brakesmen (Railway)
6. Electricians & Related Electrical & Electronic Workers.
7. Tobacco Preparers and Products Makers.

Declining Occupations

1. Directors and Managers, Wholesale and Retail Trades.
2. Directors, Managers & Working Proprietors, Others.
3.
4.
5.
6.
7. Furnacemen, Rollers, Drawers, Moulders and Related Metal Making & Treating Workers.
8. Millers, Bakers, Brewmasters and Related Food and Beverage Workers.
9. Craftsmen and Production Process Workers, n.e.c.
10. Labourers, n.e.c.
11. Building Care-takers, Cleaners & Related Workers.

Karnal District

Growing Occupations

1. Teachers
2. Jurists
3. Directors, Managers and Working Proprietors, Financial Institutions.
4. Stenographers and Typists.
5. Office Machine Operators.
6. Conductors, Guards and Brakemen (Railway)
7. Electricians and Related Electrical and Electronics Workers.
8. Tobacco Preparers and Products Makers.

Declining Occupations

1. Artists, Writers & Related Workers
2. Administrators, and Executive Officials, Government.
3. Directors, Managers & Working Proprietors, Others.
4.
5.
6.
7. Spinners, Weavers, Knitters, Dyers and Related Workers.
8. Furnacemen, Rollers, Drawers, Moulders and Related Metal Making and Treating Workers.
9. Millers, Bakers, Brewmasters and Related Food & Beverage Workers.
10. Craftsmen and Production Process Workers, n.e.c.
11. Housekeepers, Cooks, Maids & Related Workers.
12. Waiters, Bartenders & Related Workers.
13. Building Caretakers, Cleaners & Related Workers.

Mahendragarh District

Growing Occupations

1.
2.

3. Drivers & Firemen, Railway Engine and
   Drivers, Road Transport.

4. Conductors, Guards & Brakesmen (Railway)

5. Tool-makers, Machinists, Plumbers, Welders,
   Platers & Related Workers.

6. Electricians and Related Electrical &
   Electronics Workers.

7. Testers, Packers, Sorters and Related
   Workers.

8. Stationary Engine & Excavating and Lifting
   Equipment Operators and Related Workers.

9. Building Caretakers, Cleaners and Related
   Workers.

Declining Occupations

1. Biologists, Veterinarians, Agronomists
   and Related Scientists.

2. Artists, Writers and Related Workers

3.

4. Directors, and Managers, Wholesale and
   Retail Traders.

5.

6.

7. Postmen & Messengers.

8. Spinners, Weavers, Knitters, Dyers &
   Related Workers.

9. Furnacemen, Rollers, Drawers, Moulders &
   Related Metal Making and Treating Workers.

10. Painters and Paper Hangers.

11. Potters, Kilnmen, Glass & Clay Formers
    & Related workers.

12. Millers, Bakers, Brewmasters & related
    Food and Beverage Workers.

From a glance at the above list, it may be
observed that there are a few occupational groups which
show a clear tendency for growth in Gurgaon as well as
in Karnal. These are Teachers, Jurists, Stenographers
and Typists, Office Machine Operators, Electrical Workers

Table IV.4: Pattern of Occupational Change in Gurgaon District

Division/ Group based on 1958 NCO (1)		Percentage of workers in each group to the 000 in ALL DVN. (1961)	Percentage of workers in each group (1971)	Rate of change of percentage with reference to (1961)
All DVN -	R	100	-	-
	U	100	-	-
DVN - 0	R	3.690	-	-
	U	7.264	-	-
Gr. 00	R	.022	-	-
	U	.466	-	-
01	R	-	-	-
	U	.008	.025	212.5
02	R	.025	.027	8.0
03	R	.182	2.673	1368.681
	U	.691	.480	-29.578
04	R	.440	.376	-014.545
	U	.893	.581	-034.938
05	R	2.309	4.768	106.496
	U	3.684	5.034	36.645
06	R	.020	-	-100.000
	U	.361	.395	9.418
07	R	.083	.093	12.048
	U	.215	.056	-73.95
08	R	.293	.037	-87.37
	U	.104	.006	-94.23

Table IV.4   - 2 -

DVN/ Group NCC-1958 (1)	% age of workers (1961) (2)	% age of workers (1971) (3)	Rate of change of % age w.r. to (1961) (4)	DVN/ GROUP NCC-1958 (1)	% age of workers (1961) (2)	% age of workers (1971) (3)	Rate of change of % age w.r. (1961) (4)
09 R	.011	.102	827.27	DVN-3 R	8.654	-	-
U	.209	.654	212.92	U	18.448	-	-
0X, 06 R	.312	.232	-25.64	Gr. 30 R	7.216	8.061	11.71
U	.659	.327	-48.83	U	12.946	13.386	3.40
DVN 1 R	4.407	-	-	31 R	.040	.009	-77.50
U	5.389	-	-	U	.424	.364	-14.15
Gr. 10 R	4.631	11.143	163.51	32, 33 R	1.335	.641	-51.91
U	3.100	.896	-71.10	U	5.053	3.269	-35.33
11 R	.026	.018	-30.77	34 R	.016	-	-100.00
U	.486	.043	-91.15	U	.025	-	-100.00
12 R	.024	.027	12.50	DVN-4 R	7.970		
U	.055	.117	112.73	U	1.918		
13 R	.127		-100.00	Gr. 40 R	1.328	.009	-99.32
U	1.742	.080	- 95.41	U	.977	.019	-98.06
DVN 2 R	1.638			41 R	6.440	2.968	-53.91
U	0.905			U	.777	.926	19.18
Gr. 20 R	.072	.846	1075.00	42 R	.006	-	-100
U	1.682	1.748	3.92	U	.004	-	-100
21,22 R	.046	.065	41.30	43 R	.001	.018	1700.00
U	.565	.983	73.98	U	.006	.02	233.33
28,29 R	3.219	2.819	-12.55	44 R	.194	.033	-57.22
68,69 U	7.652	8.337	8.95	U	.145	.031	-78.62

Table IV.3   - 3 -

S/	age of vehicles 1971	age of vehicles 1972	Rate of change of vehicles (1971-72)	W/	age of vehicles 1970	age of vehicles (1971)	Rate of change of percentage (1971)
	.742	-	-	72	3.069	3.799	- 21.21
	.247	-	-		3.350	2.551	- 21.51
Gr.50,51 50,53	.709	.608	- 2.22	73	4.911	.499	- 7.19
	.311	.47	132.59		1.230	1.139	- 36.1
54,55	3.911			74	0.572	2.911	493.43
	4.173				1.497	2.930	571.50
60,62	.472	-	-720.00	75	.721	3.640	172.40
	.309	.463	1100.00		6.724	4.911	- 27.49
61,63	1.217	2.35	152.75	76	.490	3.043	393.14
63	3.014	2.093	15.59		1.357	4.248	189.76
65	.479	.491	275.14	77	1.490	2.973	9.36
	.611	.289	2.99.44		1.93	1.462	- 5.21
67	.439	.453	- 6.72	78	.33	.213	373.08
	.175	.273	90.77		.27	.345	27.79
58	.284	.391	70.13	79	2.939	3.341	11.13
	.307	.197	-47.26		1.400	2.598	74.90
68,7 en	3.899	-	-	33	.363	.111	74.19
	44.089	-	-		.705	1.260	78.72
70	4.217	2.292	-39.77	81	5.473	5.255	5.31
	2.373	2.360	- .35		1.670	1.340	-19.76
71	3.498	2.735	- 21.81	82	2.721	1.442	-47.58
	2.650	1.940	- 26.79		2.719	1.524	-43.86

Table IV.4   - 4 -

DVN/ Group NCO-1953 (1)		% age of workers (1961) (2)	% age of workers (1971) (3)	Rate of change of % w.r.t. (1961) (4)	DVN/ Group NCO-1953 (5)		% age of workers (1961) (6)	% age of workers (1971) (7)	Rate of change o % w.r.t. (1961) (8)
83	R	.078	.065	-16.67	95	R	.406	.317	-21.92
	U	.385	.346	-10.13		U	.547	.513	- 6.22
84	R	.001	-	-100	97	R	.001	-	-100.00
	U	.016	.025	56.25		U	.051	.074	45.10
85	R	1.396	.996	-28.65	99	R	.040	.107	167.50
	U	2.033	.364	-82.10		U	.018	.006	-66.67
86	R	.054	.275	409.26	D-X	R	.702	.009	-98.72
	U	.510	.469	-8.04		U	.111	.389	250.45
87	R	.051	.604	1084.31	Gr.X8	R	.517	.009	-98.26
	U	.605	.414	-31.57		U	.010	.207	2870.00
89	R	16.666	10.423	-37.46	X9	R	.185	(	-100.00
	U	13.116	8.243	-37.15		U	.102	.003	- 3.82
DVN 9	R	18.869	-	-		R			
	U	8.688	-	-		U			
90	R	2.945	2.465	-16.30		R			
	U	2.459	2.211	-10.09		U			
91,92	R	.492	.910	84.96		R			
	U	1.457	.921	-36.79		U			
93	R	12.710	4.365	-65.66		R			
	U	3.192	1.804	-43.48		U			
94	R	2.277	2.615	14.84		R			
	U	.906	2.465	172.08		U			

Table IV.5: Growing, Stagnant & Declining Occupations

DISTRICT GURGAON

(OCC Classification of NCO-1958)

Occupation Code

Fast Growing — 01 U, 03 R, 06 R, 07 U, 08 R, 08 U,

09 R, 09 U, 20 R, 60 U, 62 U, 65 R,

65 U, 74 R, 74 U, 76 R, 78 R, 86 R, 87 R

Moderately growing — 05 R, 10 R, 12 U, (50,51,52,59) U,

(61,63,64) R, 75 R, 76 U, 94 U, 99 R,

67 U, 68 R, 79 U, 80 R, 80 U, 84 U,

(91, 92) R.

Declining — 10 U, 11 U, 13 R, 13 U, (21,22) U, 31 R,

34 R, 34 U, 40 R, 40 U, 42 R, 42 U, 44 R,

44 U, (60, 20) R, 73 R, 84 R, 85 U, 93 R,

97 R, 99 U, X-R

Fast Declining — 03 U, 04 U, (0x,96) U, 11 R, (32,33) R,

41 R,(50) R, (51,52,59) R, 68 U, 70 R,

71 U, 72 R, 73 U, 75 U, 82 R, 82 U,

85 R, 87 U, 89 R, 89U, (91 to 93) U.

Table IV.6: Growing, Stagnant and
Declining Occupations

Mahendargarh (HARYANA)

Occupation Code 1958 NCO

Fast Growing   - 07 R, 10 R, 41 R, 44 R (61,63,64) R,
                    65 R, 65 U, 75 R, 76 R, 86 R, 87 R,
                    X U, X8 U, X9 R, X9 U,

Moderately   - 05 U, 09 U, (21,22) U, 34 U, 44 U,
Growing
                    (50,51, 52,59) R, 67 U, 74 R, 76 U,
                    80 U, 83 U, 86 U, 97 U, 03 R, 06 U,
                    41 U, (61,63,64) U, 75 U, 85 R, 87 U,
                    89 R, (91,92) R, 93 R, 93 U.

Neutral Range

Declining   - 02 U, 03 U, (96, ox) U, 68 U, 71 R,
                    72 R, 81 R, 81 U, 90 U.

Fast declining   - 02 R, 04, 08 U, (96, ox) R, 06 R,
                    08 R, 09 R, 10 U, 11 R, 11 U, 12 R,
                    12 U, 13 R, 13 U, (21,22) R, (32,33) R,
                    34 R, 40 R, 40 U, 42 R (50,51,52,59) U,
                    67 R, 68 R, 70 R, 70 U, 73 R, 73 U, 78 R,
                    78 U, 80 R, 82 U, 82 R, 83 R, 84 R, 85 U,
                    95 U, 99 U.

- - -

Table IV.7: Growing, Stagnant and Declining
Occupations

District Karnal (Haryana)

Occupations Code 1958 NCO

Fast Growing — 05 R, 05 U, 06 U, 09 U, 12 R, 12 U,

(60,62) U, 65 R, 65 U, 75 R, 76 R,

84 R, 87 R, X U, X8 U, X9 U.

Moderately — 03 R, 11 U, (21, 22) R, 44 U, (61,63) R,
growing
67 R, 74 U, 76 J, 78 U, 90 R, 97 U,

(21,22) U, (28,29) R, (66,69) R, 31 U,

43 R, 68 R, 79 U, 83 U, 84 U, 94 R

Neutral Zone

Declining — 09 R, (96, 0x) U, 10 R, 31 R, 34 U,

70 U, 71 U, 82 U, 85 R, 89 U, (91,92) U,

93 U.

Fast decling — 01 R, 07 U, 08 R, 08 U, 10 U, 13 R,

13 U, 20 R, (32, 33) R, 34 R, 40 R,

40 U, 42 R, 42 U, 43 U, 44 R, (50, 51,

52, 59) R, (50,51,52,59) U, 70 R,

73 R, 73 U, 75 U, 83 R, 85 U, (91,92) R,

93 R, 99 R, XR, X8 R, X9 R.

Conductors, Guards and Brakesmen, Tobacco Preparers and product Makers. The pattern of occupational growth potential is somewhat different in the case of Mahendra-garh. Similarly, among the relatively declining occupations, some of the occupational groups common to at least two of the above districts are the Spinners & Weavers; Furnacemen, Rollers, etc.; Millers, Bakers, Brewmasters etc.; Craftsmen and production process Workers, n.e.c.; Artists, Writers and Related Workers.

IV.1.4 <u>Vocational Implications</u>

Next we may attempt to translate the above analysis in terms of the vocational courses which are likely to need special emphasis to support anticipated expansion of the growing occupations. For this purpose we turned to table II.6 which attempts to give the vocational course needs of each two digit level occupation. On the basis of this linkage table, the following courses would need extra emphasis in the case of Gurgaon district:

Course No.	Course Name
x 2	Construction Technology (U)
00 3	Engineering Assistants Course (R & U)
5	Teachers Training (R)
x 6	Banking and Insurance (U)
x 7	Telecommunications (U)
8	Special Language Course (R & U)
x 19	Food preservation (U)
00 22	Commercial Arithmetic (R)
00 x 32	Interior Decoration & Commercial Designing (R)
00 xx36	Mechanical Workshop & Electrical Workshop Courses (R & U)
00 xx 40	Introductory Mechanical Engineering Courses (R & U)

oo 41	Introductory Civil Engineering Course (R &U)
00 x x 42	Introductory Electrical Engineering Course (R & U)
oo 43	Basic Commerce Course (R & U)
oo 44	Fine Arts (R & U)
47	Home Science (R)

In the above list the courses which have been marked by an asterisk sign (x) are those which did not appear in the list of Feasible Courses derived in table II.8 on the basis of the 1971 occupational structure, but appear now when growth potential of occupations is used as the criterion. The courses marked by double xx are those which appear against more than two growing occupations and thus are likely to be having comparatively good growth potential. Similarly the courses marked by double o (oo) are those which link up with occupations which registered very steep expansion during the sixties according to Population Census data. As indicated earlier, very fast growing occupations have been defined by us as those in whose case their proportionate position improved by more than +200% during 1961-71. Thus the courses which bear double x as well as double o signs should be expected to have fairly assured prospects of demand. In a similar manner the list of vocations in the districts of Karnal & Mahendragarh needing emphasis on the basis of their growth trend during the sixties is given below :

District Karnal

Course No.		Course Name
x 2	...	Construction Technology (U)
oo x 3	...	Engineering Assistant Courses (U)

Course No.	Course Name
oo 5	Teachers Training (R & U)
oo 6	Banking & Insurance (R & U)
x 7	Telecommunications (R)
8	Special Language Course (R & U)
x 10	Typewriter & Duplicator Mechanic (R & U)
11	Salesmanship & Marketing (U)
x 14	Forestry (U)
oo 19	Food Preservation (U)
x 28	Glass Technology (U)
x 29	Plastic Technology (U)
xx 32	Interior Decoration & Commercial Designing (U)
oo xx 36	Mechanical Workshop & Electrical Workshop Course (R & U)
oo 37	Heat Engines (R)
x 38	Fertiliser Technology (U)
x 39	Ceramic Processes (U)
oo xx 40	Introductory Mechanical Engineering (R &U)
oo xx 42	Introductory Electrical Engineering (R &U)
oo 41	Introductory Civil Engineering (R & U)
00 xx 43	Basic Commerce Course (R & U)

District Mahendragarh

Course No.	Course Name
x 3	Engineering Assistants Course (U)
5	Teachers Training (U)
6	Banking & Insurance (U)
8	Special Language Course (U)
x 10	Typewriter & Duplicator Mechanic (U)
x 14	Forestry (R & U)
x 28	Glass Technology (U)
x 29	Plastic Technology (U)
x 32	Interior Decoration & Commercial Designing (U)
oo xx 36	Mechanical & Electrical Workshop (R&U)

Course No.	Course Name
oo 37	Heat Engines (U)
38	Fertilizer Technology (U)
39	Ceramic Processes (U)
oo xx 40	Introductory Mechanical Engineering (R & U)
oo xx 42	Introductory Electrical Engineering (R & U)

The asterisk (x), the double x and double o signs in the above lists have the same significance as in case of the Gurgaon list.

IV.2 Quantitative Estimates and Implications of Occupational Change

This brings us to the second approach. The preceding analysis was more of a qualitative character intended to identify the growing and declining occupations and their broad implications for vocational courses. As illustrated in chapter II, the relative magnitude of student in-take into the various vocational courses should take account of the occupational structure existing at any point of time as also the envisaged changes on account of the trend element. Thus, having derived the 1961 and 1971 occupational structures and having estimated the rate of change in the percentage of manpower engaged in each two digit level occupational group for a few districts, the objective was to modify the percentage occupational structure based on Census 1971 on the basis of the assumption that the broad trend of 1961-71 occupational change would continue for the next decade when those qualifying from the +2 stage would come on to the job market. Once the modified occupational structure were derived, the next step would be to apply the methodology of section II.6 to

to this modified structure, thus enabling identification of vocational courses and their quantitative structure on the basis of the base position as well as the trend element.

But there were difficulties in evolving a methodology for deriving a modified occupational structure which would appropriately reflect the position likely to prevail about a decade after 1971. The first problem we encountered and the method which we adopted are best elucidated with the help of a simple hypothetical illustration. Suppose, as shown in table IV.8, there were three occupations in an economy employing 10, 60 & 30 thousand workers in 1961 and 18, 60 and 42 thousand workers in 1971. The problem is to make the best possible estimate of the occupational structure in 1981 on the assumption that 1961-71 trend for each occupational group would continue. One possible method is to linearly extrapolate 1961-71 rate of change of percentage of manpower engaged in each occupation and on this basis derive percentage occupational structure for 1981, as given in column 6 of table IV.8. But these percentages are inconsistent for they add up to more than 100%. What it shows is that methodologically linear extrapolation of the rate of change cannot be applied to each component of a variable and yield results which would be consistent with extrapolation of the aggregate at its rate of change. But if we extrapolate not the rate of change of the percentage of manpower employed in each occupational group but absolute change in the percentage of manpower employed in each occupational group, we can get consistent results as shown by column (7) of table IV.8. Here positive and negative

changes in the percentages add up to an equal figure, thus bringing the total of component percentages to one hundred. It is this method which has basically been used by us for modifying the 1971 occupational structure of Gurgaon district on an experimental basis.

But in application of this method three further difficulties had to be resolved. The first difficulty arose out of the problem already referred to, viz., that caused by what appears to be erratic identification of occupations in the Censuses of 1961 & 1971. Should be incorporate full absolute change in percentage of manpower engaged in a particular occupational group even in cases where change was extremely high or low and in all probability the consequence of either wrong occupational categorisation or of definitional changes? This did not seem to be justifiable. Therefore, we devised a scheme of deflating the larger positive and negative changes. For all those occupational groups where percentage increase in their percentage share was more than +200%, the absolute increase in percentage during 1961-71 was divided by four before being added to the respective 1971 percentage. Between 0 and + 50% increase in the percentage share of any occupational group, the 1971 percentage share of that occupational group was retained without any change. In between these two ranges as also in case of the negative absolute changes, a graded system of adjustment was adopted, which is outlined below:

Direction and magnitude of occupational change	Deflation factor (by which actual absolute 1961-71 changes are to be divided)
0 to + 50 % ...	1
+ 50% to + 100% ...	2
+ 100% to + 200% ...	3

+ 200%	...	4
0 to - 25%	...	1
-25% to - 50%	...	2
-50% to - 90%	...	4
- 100%	...	

As may be observed, deflation factors for the negative range have been given higher values for a much smaller percentage change than in the case of positive range. This obviously has been done for in case of negative range, the maximum limit is -100%, whereas in positive direction, theoretically there is no upper limit. One further point to be explained is that all those occupational groups for which there had been a 100% decline during 1961-71, i.e. where 1971 figures were zero - and there were occupational groups of this type - the deflation factor was taken to be infinity. What this amounts to is that in the modified occupational structure such occupational groups are assigned zero percentage. This step was essential, for in its absence the modified occupational structure would have contained negative values. After application of the deflation factors to absolute changes in percentages, the relative trend of change for different occupational groups is still retained, but they tend to eliminate or at least reduce highly erratic type of occupational changes.

Now we come to the second difficulty and the manner in which it has been resolved. After the deflated values of absolute change between 1961 and 1971 had been worked out for each 2 digit level occupational group, there was

nothing to ensure that the sum of deflated positive
and negative absolute changes would be exactly equal,
though randomly cancelling errors were likely to make
them nearly equal. Their equality is a necessary condition
to avoid inconsistency, for in case they were not equal
and were added to and subtracted from the 1971 occupational
percentages to derive the modified occupational structure,
all the percentages of this modified occupational structure
would not add up to 100. In order to get over this in-
consistency, the procedure decided upon was like this. The
difference between the sum of positive and negative absolute
changes should be found out. If the sum of positive
changes exceeded that of negative ones, the value of each
absolute positive change should be reduced roughly in propor-
tion to its size, such that total reduction should equal
the magnitude by which aggregate of deflated positive
absolute changes exceeded the aggregate of negative ones.
On the other hand, if the sum of negative absolute changes
exceeded the sum of positive ones, the reverse procedure
should be followed.

The procedure for the above step may be illustrated
with reference to Gurgaon. After the absolute changes in
occupational percentages had been calculated by subtracting
column (2) from column (3) of table IV.4, the positive
and negative deviations were aggregated separately, yielding
the following estimates:

URBAN SECTOR (GURGAON)

Σ+ve deviations = + 5.255% No. of occupational
Groups responsible
for these deviations = 18

Σ-ve deviations = - 6.740% -do- = 19

Net Difference = - 1.485 %

RURAL SECTOR (GURGAON)

Σ+ve deviations = + 6.9%   No. of occupational groups
                                    responsible for these
                                    deviations   = 18

Σ-ve deviations = - 9.862%   -do-   = 22

    Net Difference = - 2.962 %

Thus in the case of urban sector the net difference
of -1.485% points was distributed proportionately among
the nineteen negative deviation occupational categories
and in rural sector it was distributed among the 22 negative
deviation categories. The adjusted magnitudes of absolute
occupational change thus derived are given in table IV.9.
These absolute magnitudes of occupational change were added
to or substracted from the respective occupational group
percentages of 1971 as given in column (3) of table IV.4.
We thus derived table IV.10, which gives the desired modi-
fied occupational structure for Gurgaon after incorporating
the trend effect.

IV.3 Modified Vocational Course Structure for Gurgaon

    But the last difficulty before arriving at a modified
quantitative vocational course structure and the step
necessary for tackling it still remain to be elucidated.
The whole of the above exercise has been based upon esti-
mating and incorporating the trend in terms of occupational
classification of the total labour force whereas from the
point of view of quantitative estimates for the vocational
courses, it is changes in matriculate level occupational
structure which should have been estimated. The problem here
was that in 1961 Census the educational break up of work force
within the different occupations was not available at two
digit level classification. This made it impossible to apply

Table 2.0 : ... PROJECTION OF OCCUPATIONAL CHANGE

(1)	Workers in 1961 (2)	Percentage structure 1961 (3)	Workers in 1971 (4)	Percentage structure 1971 (5)	Percentage structure for 1981 on the basis of linear extrapolation of rate of absolute change in each occupational group during 1961-71 (6)	Percentage structure for 1981 on the basis of linear extrapolation of absolute change for each occupation group during 1961-71 (7)
Occupation A	10,000	10 %	15,000	15 %	29.5 %	20 %
Occupation B	60,000	60 %	85,000	50 %	44.2 %	40 %
Occupation C	30,000	30 %	48,000	35 %	42.3 %	40 %
	100,000	100 %	148,000	100 %	115.0 %	100 %

Table IV.9 : Estimates of Adjusted Occupational Change

G-URGAON DISTRICT

URBAN		RURAL	
Occupational Group (1958 Code)	Adjusted occupational change	Occupational Group (1958 Code)	Adjusted occupational change
01	+ 0.004	03	+ 0.623
03	− .060	05	+ 0.820
04	− .091	09	+ 0.023
07	− 0.040	10	+ 2.306
09	+ 0.111	11	− 0.004
ox 96	− .091	20	+ 0.192
10	− .425	31	− 0.008
12	+ .021	32,33	− 0.150
21,22	+ 0.210	41	− 0.624
43	+ .001	43	+ 0.004
44	− 0.029	44	− 0.028
50−59	+ 0.009	50−59	− .100
60−62	+ 0.006	61,63,64	+ 0.534
65	+ 0.052	65	+ 0.046
67	+ 0.052	68	+ 0.085
68	− 0.088	70	− 0.519
71	− 0.262	72	− 0.701
73	− 0.126	73	− 0.204
74	+ 1.565	74	+ 0.510
75	+ 0.931	75	+ 0.623
76	+ 0.794	76	+ 0.642
79	+ 0.554	78	+ 0.044
80	+ 0.278	80	+ 0.024
82	− .475	82	− 0.460
84	+ 0.005	85	− 0.075
85	− 0.313	86	+ 0.055
87	− 0.096	87	+ 0.138
89	− 2.402	89	− 2.381
91,92	− 0.182	91,92	+ 0.209
93	− 0.572	93	− 1.546
94	+ 0.520	99	+ 0.022
99	− 0.003 + 0.070	x 3	− 0.100
x 8	+ 0.072		

Table IV. 10: Projected Occupational Structure
Incorporating Trend Element

GURGAON DISTRICT

Division/Group based on 1958 NCO	RURAL	URBAN	Division/Group	RURAL	URBAN	Dvn/Group	RURAL	URBAN
All Divisions			44	.045	.002	93	2.819	1.232
Dvn - 0			5-5			94	2.615	2.985
Group-00			50,51, 57,59	.330	.058	95	.317	.513
01	--	.029	5-6			97	--	.074
02	.027	.037	60,62	--	.030	99	.129	.003
03	3.296	.428	61,63,64	3.332	3.342	D-X	.009	.459
04	.376	.490	65	.279	.299	x8	.009	.369
05	4.768	5.004	67	.055	.330	x9	--	.093
06	--	.395	68	.476	.103			
07	.093	.016	D-7-8					
08	.037	.006	70	2.040	2.360			
09	.125	.765	71	2.735	1.678			
Ox, 96	.232	.235	72	3.047	2.551			
Dvn 1			73	.251	1.004			
Gr. 10	13.455	.471	74	3.421	8.964			
11	.014	.043	75	3.463	5.842			
12	.027	.138	76	3.507	5.037			
13	--	.080	77	3.373	1.452			
Dvn-2			78	.257	.345			
Gr. 20	1.038	1.748	79	3.341	3.152			
21,22	.065	1.193	80	.135	1.538			
28,29,66, 69,	2.615	8.337	81	5.930	1.340			
Dvn-3			82	0.982	1.113			
Gr. 30	8.061	13.386	83	0.065	.346			
31	.001	.364	84	--	.030			
32,33	.641	3.269	85	.921	.051			
34	--	--	86	.330	.469			
Dvn- 4			87	.742	.318			
Gr. 40	.009	.019	89	8.042	5.841			
41	2.344	.926	D-9					
42	--	--	90	2.465	2.211			
43	.014	.019	91,92	1.119	.739			

the procedure outlined above directly to the matriculate
level occupational structure. The next best alternative
was to try to derive matriculate level occupational
structure from the modified occupational structure of
table IV.10 with the help of 1971 proportions of matri-
culates among total workers in each occupational group.
This transformation can be achieved through equation (2)
of chapter II, page_____. The transformation was achieved
by selecting 1971 percentages of matriculates among total
workers in two digit level occupational groups of Gurgaon,
for comparable 1961 two digit level occupational groups
since the modified occupational structure of table IV.10
is in terms of 1961 categories. These percentages of
matriculates, which are given in columns (2) & (4) of
table IV.11, for rural and urban sectors of Gurgaon res-
pectively, were applied to table IV.10 to derive the desired
modified matriculate level manpower structure as given in
columns (3) & (5) of table IV.11.

The last step was to transform this matriculate
level manpower structure into a structure of vocational
course requirements with the help of occupational-education
linkage table II.6 in the same manner as was done in
Section II.7. We thus finally obtained table IV.12, which
gives a vocational-academic course structure for Gurgaon
based upon 1971 occupational structure as also upon a linear
extension of occupational trends during 1961-71. Using the
same cut off points as in section II.7, the courses which
lie above the cut off point and hence can be considered
as feasible may be identified by an asterisk placed against
the course numbers in table IV.12. A comparison of the

list of asterisked courses in table IV.12 with the list

of feasible vocational courses for Gurgaon as given in

table II.8 shows that there is no substantial change in

the list of feasible courses, though the proportions

assigned to different courses have undergone a change.

But in the light of various assumptions which had to be

made on account of difficulties in comparability of 1961

& 1971 Censuses, it is difficult to place too much reliance

upon the quantitative differences in the proportional

structure of courses revealed by table IV.12 in comparison

to table II.8. It appears, therefore, that as far as

selection of feasible courses goes, the case of Gurgaon

reveals that the more complex procedure incorporating the

trend element experimented within this and the previous

section does not score much over the simpler procedure

adopted for vocation identification in the last two chapters.

This procedure is not repeated for other districts. The

more useful way of identifying courses likely to come into

prominence as a result of the trend of occupational change

appears to be to spot the growing and decaying occupations

and assess their vocational implications as in section

I (b) to I (c) of this chapter. Thus qualitative analysis

of occupational change and its vocational implications

seems to be more rewarding than the quantitative one.

Table IV.11 : Projected Matriculate Level Occupational Structure

Division/Group based on 1958 NCO	RURAL		URBAN	
	Percentage of Matriculates to workers in each group	% age of Matriculates in each group to total matriculates	% age of Matriculates to workers in each group	% age of Matriculates in each group to total matriculates
(1)	(2)	(3)	(4)	(5)
All Division				
Gr. - 00				
01	-	-	-	-
02	-	-	-	-
03	32.06	5.65	29.11	.70
04	35.00	.70	38.30	1.10
05	68.36	17.55	21.72	6.33
06	-	-	15.69	.35
07	90.00	.43	33.33	.06
08	100.0	.22	-	-
09	72.73	.48	45.28	2.03
ox, 96	12.00	.11	11.33	.17
Dvn - 1				
Gr.- 10	49.15	35.58	57.14	1.57
11	-	-	-	-
12	66.67	.11	21.05	.17
13	-	-	30.77	.17
Dvn - 2				
Gr. 20	72.53	4.04	42.05	4.30
21,22	71.43	.27	64.78	4.47
28,29,66,69	57.10	8.67	45.49	21.95
Dvn - 3				
Group-30	2.54	1.08	12.24	9.52
31	100	-	25.42	.52
32, 33	10.14	.38	10.20	1.92
34	-	-	-	-
Dvn - 4				
Group-40	-	-	-	-
41	2.19	.27	2.67	.12
42	-	-	-	-
43	-	-	-	-

Table IV.11   - 2 -

Division/ Group based on 1958 NCO (1)	RURAL		URBAN	
	% age of Matriculates to workers in each group. (2)	% age of Matriculates in each group to total matriculates (3)	% age of Matriculates to workers in each group (4)	% age of Matriculates in each group to total matriculates (5)
Group - 44	44.44	.11	40.00	-
Division -5				
Gr. 50,51,52,59	-	-	25.00	.06
Dvn. -6				
Gr. -60,61	-	-	50.00	.12
61,63, 64	9.63	1.72	6.10	1.16
65	44.00	.65	45.00	.75
67	33.33	.11	43.89	.93
68	40.48	1.03	33.71	.23
Dvn. 7-8				
Gr. - 70	8.36	.91	8.64	1.16
71	4.08	.59	3.50	.35
72	4.71	.75	10.17	1.51
73	14.29	.32	7.65	.46
74	13.42	2.48	24.04	12.49
75	13.44	2.53	21.76	7.38
76	13.64	2.58	26.06	7.61
77	2.48	.43	7.23	.58
78	8.70	.11	16.13	.35
79	1.39	.27	3.52	.64
80	8.33	.05	30.39	2.73
31	0.63	.22	7.37	.58
82	10.97	5.33	10.51	.64
83	-	-	21.43	.41
84	-	-	25.00	.06
85	14.02	.70	15.25	.06
86	6.67	.11	11.84	.35
87	24.62	.97	17.91	.35
89	0.89	.38	3.22	1.10
Divn - 9				
Group- 90	9.43	1.24	14.33	1.86
91,92	4.76	.27	3.33	.12

Table IV.11   - 3 -

Division/ Group based on 1958 NCO (1)	RURAL		URBAN	
	% age of Matriculates to workers in each group (2)	% age of Matriculates in each group to total Matriculates (3)	% age of Matriculates to workers in each group (4)	% age of Matriculates in each group to total Matriculates (5)
Group - 93	0.64	.11	0.34	-
94	4.63	.65	-	-
95	-	-	4.82	.12
97	-	-	50.00	.23
99	-	-	100.00	-
Dvn - X				
Group - X8	-	-	4.17	.12
X 9	-	-	13.33	.06

Table IV.12 : Modified Vocational Structure
(incorporated in terms of cost)

DISTRICT GLASGOW

Course Code (according to Table II. 7) O.S.V.J.	Percentage of students assigned to each course	
	RURAL	URBAN
1.		
2	.27	.64
3	.48	2.05
4	.70	1.10
5	17.55	6.33
6	.11	.69
7	.11	.93
8	4.53	15.95
9		
10	.14	2.24
11	1.46	11.44
12		
13		
14	.11	--
15	.22	.46
16		
17	.91	1.16
18	.75	1.51
19	2.67	.35
20	.43	.58
21		
22	4.04	4.30
23	.65	--
24	.59	.35
25		
26		
27		
28	.22	.68
29	--	.1
30		
31	.05	2.73

Table IV. 12   - 2 -   - 164 -

Course Code	RURAL	URBAN
33		
34		
35		
36	5.03	20.10
37	.97	.35
38	—	.1
39	—	.1

Common Core Course

	RURAL	URBAN
40	9.46	20.90
41	.81	.82
42	4.53	11.10
43	6.02	18.96
44	.76	.60
45	4.48	13.22
46	.45	1.22
47	2.03	2.39
48	.22	.46
49	.01	1.16
50	—	—
51	—	—

| 52 Academic subject | 69.45 | 26.55 |

VOCATIONAL SURVEYS: A CASE STUDY OF GURGAON

V.1 Vocational Surveys vis-a-vis the Census Based Methodology

In the preceding two chapters we have utilised secondary sources of data for obtaining guidelines regarding the vocational courses which might be considered feasible for different districts. The three main limitations of the methodology based on secondary sources, for our purpose, are:

(i) Even at the two digit level of occupational classification, which runs into over ninety groups, the aggregation within each group is more than desirable for obtaining a sharply defined occupational-vocational correspondence. Population Census data are not available at three digit level classification. But even if they were, there is a problem of trade-off involved here - the narrower the groupings of classification used, the greater the problem of reliability of occupation identification and, as we have seen, this can be a serious problem when assessing inter-temporal trends.

(ii) Secondary sources of data become available with a time lag. In the case of Population Census, as is known, it is carried out at an interval of ten years and the district level data become available only after a few years.

(iii) Temporal analysis based on secondary sources of occupational data can only provide past trends as the basis for assessing future occupational changes. They cannot incorporate the effect of technological change and any other

new developments, as a consequence of which the past
trends may not necessarily continue into the future.
This is especially so when past trend has to be based
on two points of time separately by ten years.

In the light of these points, for obtaining recent
picture in terms of more sharply defined occupational
categories than the two digit level groups and for assessing
future occupational changes likely to arise on account of
envisaged expansion of economic activities, vocational field
surveys assume significance at the small area level. But
it has to be borne in mind that they have limitations of
their own and can only be complementary, not a substitute
for, the analysis based on secondary sources like the
Population Census. The reasons for this are two fold. In
the first place, field surveys can be carried out to assess
occupational manpower requirements only in selected key
sectors. Even through sampling it is not easy to make them
as comprehensive as the coverage of Population Census. The
time and cost constraints generally would not permit coverage
of more than a fraction of all the sectors.

Secondly, even within each sector, in a semi-developed
country like India, a high proportion of working force is
engaged in self employment, or in employment in very small
unorganised units akin to households. It is very difficult
to make a full assessment of detailed occupation-wise
employment potential for the self employed on the basis of
a field survey. Field surveys to assess occupational
potential for identification of vocations have a role mainly
for units, big or small, in organised segments of productive
or service activities. But even within the organised units,
the proprietors, particularly the small ones, do not always

schedules[1]/pertaining to:

i) A survey of current non-farm establishments.

ii) A survey of prospective establishments.

iii) A study of emerging occupations and areas for self-employment as revealed by knowledgeable persons from the fields of business, government, professions etc.

iv) A survey of occupational needs of plan schemes.

The idea behind canvassing a set of four schedules is essentially to try to enhance the comprehensiveness of the survey approach as far as possible and to obtain quantitative as well as qualitative information. Schedule (i) forms the backbone of the survey approach. Schedule (iii) is mainly supposed to provide information of a qualitative character, which can partly be used as a check upon conclusions derived through the other schedules and the secondary sources.

V.2   The Pace and Pattern of Industrialisation of Gurgaon

We may now take a fleeting glance at the industrial background of Gurgaon district, for the results of the vocational survey shall have to be viewed in the context of its economic structure. Gurgaon is one of the districts which has exhibited a phenomenal pace of industrialisation over the last quarter of this century. While in 1951 there were only about 25 industrial units in existence in the organised sector, that number has by now risen to more than two thousand. Between the Censuses of 1951 & 1971, the proportion of work force dependent upon industries and allied secondary activities within the non-agricultural sector

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1/ This set of four schedules has been devised by Dr. D.J. Nandedkar, Manpower Officer of Bombay.

have precise idea about their envisaged programmes of expansion. If the coverage of all sectors and their segments through the survey method is not comprehensive and the ideas of the entrepreneurs about future expansion plans are not always very definite, the total picture obtained by aggregation of the individual expansion plans as revealed through survey questionnaires may not be very complete and accurate. It is on account of these pros and cons of vocational planning based on secondary sources and on field surveys, that both approaches have to be used in a complementary manner. The role of vocational surveys in relation to the vocational planning methodology outlined earlier may be viewed as parallel to that of a magnified insat map in relation to the main map. If, for example, within a map of India, on a 25 miles to an inch scale, one wishes to highlight the details of terrain of Delhi, one can append an inset map of Delhi on a mile to an inch scale. Similarly, vocational surveys can help to provide occupationally more detailed and upto date picture for selected sectors, which can then be viewed in the context of the broader and more comprehensive framework of vocational plans based on Census data.

It was decided to test this supporting role of vocational surveys by conducting an occupational-cum-vocational survey of Gurgaon, on an experimental basis. The basic framework of survey was along the lines discussed at an All-India Conference held at N.C.E.R.T., where it was decided to confine such surveys to the organised non-agricultural sector only and to try to canvass a set of four

increased from 8.21% to almost the double, viz., 16.15%,
as against the corresponding All-India increase in this
percentage from   to   over the same period. In view
of its rapid industrialisation and its proximity to Delhi -
only about 30 Kms. from South Delhi - Gurgaon provided an
apt area for trying out the survey schedules.

The main characteristics of the pattern of indus-
trialisation in Gurgaon district are brought out by table
V.1, which gives the number of organised industrial units
as well as their structure during 1967 and 1972. The largest
number of units are concentrated in Cotton Textiles, Basic
Metal and Allied Industry, Metal Products, Machinery and
Machine Tools, Electrical Apparatus, Chemical & Chemical
Products and Wood and Wood Products. General Engineering
Industries covering Machine and Machine Tools, Basic Metal
and Metal Products Group thus comprise the most dominant type.
Employmentwise Rubber Products group comes next in importance
to General Engineering and Cotton Textiles within the organi-
sed industrial sector.

Although Leather and Leather Products are insignificant
in the organised sector, in the cottage industries sector
over 40% of employment is in leather tanning and shoe making
units. Pottery and carpentry are the other two most important
industrial categories in the cottage industry sector.

Major increase in the number of units within the
organised sector has also taken place in the six dominant
industrial groups, viz., Cotton Textiles, Chemical &
Chemical Products, Basic Metal and Alloys, Metal Products,
Machinery & Machine Tools and Electrical Appliances. There
was stagnation in four main industrial groups, namely,

Beverages, Tobacco & Tobacco Products, Non-metallic
mineral Products, Transport Equipment & Parts and 'Other
Manufacturing Industries'.

In keeping with the growth in the number of units,
industrial production in the district also registered a
significant increase. Data for growth of production during
1967-72, as given in table V.2, show that over this period
production increased in almost all industries except paper
mills, sewing machines and water pipe machinery. Major
increments in production were registered by cotton textiles,
agricultural implements, steel rolling, cycle parts, scienti-
fic instruments and glass tractors.

There are three main centres of industrial and
commercial activity in Gurgaon district, viz., Gurgaon
town, Faridabad township and Ballabgarh town. Their relative
level of industrial development may be gauged from the
percentage of workers engaged in secondary activities
according to the Censuses of 1961 & 1971 in the five tehsils
of Gurgaon, as given in table V.3. This percentage is the
highest and has grown at the fastest pace in Ballabgarh
tehsil. This is mainly the result of growth of Faridabad
township, which falls in Ballabgarh tehsil.

Table V.3

Percentage of workers in secondary activities

	1961	1971
Gurgaon	10.38	13.62
Ballabgarh	22.47	44.67
Palwal	9.07	10.12
Nuh	5.05	6.46
Ferozpur Jhirka	7.36	8.26

Table V.1

Number of working factories industry-wise 1967-72

	1972	Percentage	1967	Percentage
1	2	3	4	5
1. Food products	11	2.36	5	1.77
2. Beverage tobacco & tobacco product	1	.21	1	.35
3. Cotton textile	40	8.53	x	
4. Wood, silk & synthetic fibre	5	1.07	X	
5. Jutes, Hemp & Merta textiles	1	.21	X	
6. Textile products	2	.42	3	1.06
7. Wood & Wood products	39	8.36	30	10.63
8. Paper & paper products	15	3.21	6	2.12
9. Leather & leather products	X		X	
10. Rubber plastic and products	20	4.29	18	6.38
11. Chemical & chemical products	31	6.65	9	3.19
12. Non-metallic minerals products	23	4.92	23	8.15
13. Basic metal & allied steel industry	39	8.36	25	8.86
14. Metal products & parts	47	10.08	30	10.63
15. Machinery & machine tools	93	19.95	60	21.27
16. Electrical machinery apparatus appliances	50	10.72	34	12.05
17. Transport equipment & parts	21	4.50	21	7.44
18. Other manufacturing industries	21	4.50	21	7.44
19. Electricity	2	5.42	1	.35
20. Gas & steam	2	.42	1	.35
21. Water works & supply	X		X	
22. Storage & ware housing	1	.21	X	
23. Repair services	2	.42	X	
Total	466		282	

Source: Load Bank Survey Report on Gurgaon

TABLE V.2

INDUSTRIAL PRODUCTION IN 1967-68 AND 1972-73

	Paper M.Tones	Cotton tex. 000 Rs.	Cement	Sugar	Cycles No.	Sewing Machine No.	Agri. Impliments Rs. Lakh	Steel re-rolling M. Tones	Water pipe fitting
1967-68	6783	43335	-	-	25595	66	6575	1324	
1972-73	5800	74000	-	32,000	24250	420	27211	132	

	Cycle parts	Scientific instruments 000 Rs.	Glass 000 Rs.	Hosiery	Woollen Tex. 000 Rs.	Power loom weaving Rs. Lakh	Machine Embroidary Rs. 000	Cotton ginnicy pressing	Tractor No.
1967-68	725	154	5148	-	-	200.36	-	-	2796
1972-73	4705	19297	18000	-	5200	480.00	11,700	-	6095

The relative importance of large, small, ancillary and cottage industry in Gurgaon district and their distribution in the Ballabgarh, Gurgaon and Palwal tehsils are brought out by table V.4 It is evident that while in terms of the number of units, the cottage industries predominate, in terms of value of production, it is the large and medium units which are, as expected, the most important. But what is revealing is that even in terms of employment, it is the large and medium units which are dominant. In terms of the number of units, employment and value of production, Ballabgarh tehsil comes at the top, obviously on account of the location of Faridabad in this tehsil. The number of ancillary units, which are one of the indicators of the strength of inter-industry linkage within an industrial complex, are about three times more prominent in Faridabad than in Gurgaon town.

V.3   The Sample Design

In order to keep the size of the survey within the limits of financial and organisational feasibility, it was decided to conduct the vocational survey in the towns of Gurgaon and Faridabad. The survey has been completed in Gurgaon town and its results are analysed in this chapter, while that in Faridabad is yet to be completed. Since the basic schedule regarding survey of non-farm establishments is meant to cover only the units in the organised sector, in the light of tables V.3 & V.4, it needs to be borne in mind that in the context of overall economy of the district, the survey results pertain to blown up picture of a small, though a vital segment of Gurgaon's economy.

The first step in the process of conducting survey of current non-farm establishments was to obtain the total frame

for the survey, i.e., a list and addresses of all establishments registered with the Employment Office and the Industries Office at Gurgaon. According to the information provided by them, the total number of establishments registered with them in Gurgaon tehsil, located mostly in Gurgaon town and its vicinity, were as follows :

a) Industrial Establishments   -   345

b) Commercial Establishments   -   <u>171</u>

    Total No. of organised   -   516
    non-farm establishments   -

Full coverage could not be undertaken. Resources available permitted covering of about 225 units in Gurgaon town, which provided a fairly large sample of over 40% of the total universe for this centre of the district. Instead of selecting 225 sample units out of the universe of 516 in a completely random manner, a stratified purposive sampling procedure was adopted. In the first stratum the universe was bifurcated into industrial and commercial establishments, aiming at a coverage of 184 industrial units and 35 commercial establishments. In the second stratum all the commercial units were considered as a single homogeneous group and roughly every 5th unit on the list @# ## was picked up for selection. Those of the selected units which appeared not to be existing at the addresses or could not be contacted were omitted, thus leaving the final number of commercial units covered to be 35.

The industrial units in the second stratum were, however, sub-classified for the purposes of selecting the final units. This classification was derived on the basis of information regarding the number of units falling under

different two digit level standard industrial groups.
Column (4) of table V.5 gives this classification for
the 345 units registered with the Industries Office for
Gurgaon tehsil. In order to make the final sample as
representative for each two digit level industrial category
and meaningful as possible, selection of units out of these
fourteen industrial categories was done by further strati-
fication in the following manner :

(1) In industrial categories having less than
ten units, viz., industrial groups No. 24, 25, 27, 28,
36 and 37, all units were surveyed.

(ii) In the remaining eight industrial groups,
the number of units to be covered was roughly 159 and this
was divided roughly in proportion to the number of units
in each industrial category. The total number of units
covered in each industrial category on this basis is given
in column 5 of table V.5.

(iii) But within each of these eight industrial
categories, for the purposes of final selection, the number
of units were further sub-divided into two categories, those
employing more than ten workers and those employing less than
ten workers. Employment information for this purpose was
available with the Industries Office. It was decided to
survey all the units employing more than ten workers, for
it was found that it was these units who were generally able
to give more precise and useful answers to the questionnaire
than the smaller units. Among the remaining units employing
less than ten workers, in each of the eight industrial groups,
the units to be surveyed were selected at random.

The overall scheme of sample stratification described
above is visually portrayed in diagram 3.

Table V.4

Production and employment in different type of industries

ype of industry	Units	percentage	Production Rs. crores	Percentage	Employment 000's	Percentage
arge and medium cale units	80	1.15	115.03	80.98	32	53.33
mall scale units	193	2.77	22.78	16.19	10	11.66
ncillary small cale units	40	.57	2.81	2.11	1	1.66
illage and cottage nits	6630	95.49	1.47	.70	17	28.33

Large Scale Units - 1970-71

Tehsil	No. of units	Production (in Rs. lakh)
allabgarh	66	11299.38
urgaon	2	154.00

Rest information are not available.

Ancillary Units - 1970-71

Ballabgarh	30	240.40
Gurgaon	9	35.30
Palwal	1	5.50

Small Scale Units - 1970-71

Tehsil	No. of units	Production in (lakh Rs.)	Employment (number)
Ballabhgarh	139	1956.10	7906
Palwal	3	14.35	83
Gurgaon	47	303.94	1996

Table V.5: Number of Industrial Units in the Universe & the Sample Units

Industrial Group Code (2)	Type of Industry (3)	Total No. of Units (4)	Units covered (5)
20	Food manufacturing Industries except Beverage Industries	14	7
24	Manufacture of Wood, Cork products except manufacturing of furniture	3	3
25	Spinning, Wearing furnishing of Textile	2	2
27	Paper & Paper products	4	4
28	Printing, publishing & Allied Industries	6	6
30	Rubber Units and Rubber Products	43	20
Major head	Chemicals & Chemical Products	40	22
33	Manufacture of non-metallic products except products of petroleum and coal	79	30
34	Basic metal industries	20	15
35	Mfg. of metal products except machinery and transport equipment	82	40
36	Mfg. of machinery except electrical machinery	4	4
37	Mfg. of electrical machinery apparatus and appliances	6	6
38	Mfg. of transport equipment	21	15
39	Miscellaneous mfg. industries.	21	10

DIAGRAM 3. THE SAMPLE DESIGN (GURGAON SURVEY)

ALL REGISTERED NON-FARM ESTABLISHMENTS

INDUSTRIAL ESTABLISHMENTS

COMMERCIAL ESTABLISHMENTS

SAMPLE UNITS

NOTATION:
1. E≥10: Units employing more than 10 workers
2. E<10: Units employing less than 10 workers
3. SA: Survey all units
4. RS: Random selection of units

INDUSTRY/DISTRICT CODE	20	24	25	27	28	30	31	33	34	35	36	37	38	39

20: SA ← E≥10 ; RS ← E<10   — 7
24: SA   — 3
25: SA   — 2
27: SA   — 4
28: SA   — 6
30: SA ← E≥10 ; RS ← E<10   — 20, 20
31: SA ← E≥10 ; RS ← E<10   — 22
33: SA ← E≥10 ; RS ← E<10   — 30
34: SA ← E≥10 ; RS ← E<10   — 15
35: SA ← E≥10 ; RS ← E<10   — 40
36: SA   — 4
37: SA   — 6
38: SA ← E≥10 ; RS ← E<10   — 15
39: SA ← E≥10 ; RS ← E<10   — 10

V.4 Analysis of non-farm establishment schedules

This brings us to an analysis of survey schedules
for the industrial units. A copy of the questionnaire
is attached as appendix A. A number of occupationwise
frequency tables were prepared with a view to bringing
out the relative importance of different types of skilled
workers, what sort of expansion had been exhibited by
each type of occupational skill during the preceding two
years, the extent of vacancies existing in 1976 and vacan-
cies outstanding for back of suitable persons. These
frequency distributions have been put together in table V.6.

As may be observed, the occupational categories here
are different and much finer than those in terms of which
our earlier analysis had been carried out. These are the
trades and skills in terms of which the actual industrial
units categorise their work force and assess their manpower
requirements. Nearly one hundred occupational trades
into which the surveyed industrial units classified their
work force, can broadly be compartmentalised into four
broad groups:

> (i) Business Executives and High Level
> Professional Employees. The first 14
> occupational categories of column 1
> table V.6 and No. 18 would fall in
> this group.

> (ii) White Collar Workers: Categories
> like No. 18, 21-23, 25-35, 59, 60
> & 80 would fall in this group.

> (iii) Non-Engineering Trades: Categories
> like No. 19,20,51,87 to 100 would
> fall in this group.

> (iv) Engineering Trades: The remaining
> trades, which account for the largest
> number, mainly No. 36 to 86 (excluding
> those already counted) come within
> this category.

As may be observed from column (8), which gives
minimum qualification requirements for these jobs as
stated by the employers, almost all the occupational
categories in the above group (i) need graduates or
engineering graduates and hence fall outside the range
of our consideration. Among the remaining groups, a look
at column 3 of table V.6 shows that the top six occupational
trades with a very high degree of employment potential in
Gurgaon, arranged in descending order of importance, are :

(i) Turners   (ii) Fitters   (iii) Machine
                                       Operators
(iv) Pressmen   (v) Polisher &
                      Glazer
(vi) Supervisors (vii) Foremen

The future prospects for different occupational
skills can be assessed partly from column (5) of table V.6,
which gives expansion over the preceding two years and
partly from table V.7, which gives employers' view of
their expansion programmes. There is a considerable amount
of mutually supporting evidence available in these two
tables. Some of the occupational trades which appear to
be in very keen demand are :-

i) Turners   ii) Fitters   iii) Machine Operators

iv) Moulders   v) Polishers & Glazers

vi) Grindermen vii) Mixermen   viii) Selectors

ix) Tailors   x) Pressmen   xi) Wiremen

xii) Lathermen xiii) Die-fitters and Die-makers

xiv) Openers   xv) Welders   xvi) Salters

The industries in which these occupational skills
are likely to be needed are indicated by row one of table
V.7. As may be observed from the above list and the
preceding one of the top six occupational skills in terms

of their current employment, five skill categories, viz.,
Turners, Fitters, Machine Operators, Polisher & Glazers
and Pressmen, are important both in terms of their current
employment size and the envisaged demand for them. However,
Foremen and Supervisers, which occupy a high ranking in
terms of their current numbers do not appear to be providing
a very bright prospect for expansion in the near future.

From the point of view of vocational implications
of table V.6, the occupational groups classified under
group (ii) above do not need any specific vocational
courses apart from either Course No.8 (Special Languages),
Course No. 43 (Basic Commerce Course), Course No. 22
(Commercial Arithmetic) or Course No. 45 (Secretarial
Practice).

The bulk of employment as revealed by table V.6 is
in occupational groups we have classified above under
Engineering Trades. Most of these trades require specific
training, the more apt place for which is specialised
vocational institutions like I.T.I and Technical Schools.
The courses within our list which cater to the demands of
Engineering occupations at the middle and lower level are
Course Nos. 36 (Mechanical and Electrical Workshops),
37 (Heat Engines), 40 (Introductory Mechanical Engineering)
and 42 (Introductory Electrical Engineering). Prospects
for these courses in Gurgaon should be bright and
all these (except course No. 37) do appear in the list
of feasible courses of table III.8.

As enunciated earlier in Chapter I of this study,
the objective should be a harmonious co-ordination between

the school and vocational institutions sector for the
purpose of furthering vocationalised education. Since
training for a good many of the specific engineering trades
listed in table V.6 is more aptly provided in specialised
vocational institutions, it would be worthwhile to see the
extent to which the vocational institutions existing in
Gurgaon cater for the occupational skills listed in table
V.6 and specifically for the fast expanding occupational
skills enumerated above. The available published data
about the various types of courses provided in vocational
institutions located in Gurgaon district are reproduced
in table V.8 from the IAMR All-India Survey of Technical &
Vocational Education and Training. One difficulty about
this table for our purpose is that it pertains to the
whole of Gurgaon district while for present our analysis
of survey schedules is confined to the industrial complex
in and around Gurgaon town. To that extent the quantitative
figures of in-take capacity given in table V.8 would not be
relevant till Faridabad complex is also surveyed. But one
can broadly compare the type of skills for which courses
are being provided in the vocational institutions and the
occupational trades occuring in table V.6, which represent
the categories in which employment is being provided at
present in Gurgaon and the fast expanding occupational
skills which have been listed above. It appears that the
range of courses provided in the vocational institutions
of Gurgaon is sufficiently broad based to supply a good
majority of skills in demand in the industrial sector of
Gurgaon. Among the fast expanding list given above, the
occupational skills for which there does not seem to be a

corresponding course in existence in table V.8, are listed below. The description given in the brackets against each occupational skill indicates the industry in which the dominant demand for that particular skill arises :

i) Polish & Glazers   (Manufacture of Metal products except Machinery & Transport Equipments).

ii) Grindermen   (-do-   )

iii) Pressmen   (Rubber & Rubber products Basic Metal Industries Manufacture of Transport Equipments   )

iv) Mixermen   (Rubber & Rubber products)

v) Selectors   (Food Manufacturing except Beverage)

vi) Salters   (-do-   )

vii) Openers   (-do-   )

From the above list it is evident that some of the skills required in Rubber industry, which is a key industry in Gurgaon town, in Food Manufacturing Industry and in Manufacture of Metal Products, do not have adequate training courses and indicate areas where vocational courses could be considered for being initiated. However, it needs to be borne in mind that for many a type of occupational skill, the employers responding to our questionnaire had expressed a preference for employing raw hands and giving them on-the-job training rather than employing pre-trained personnel. The reasons for this varied. Sometimes it was on account of the fact that employers felt that the vocational institutions did not provide adequate training to make a person directly start working on a specific skilled assignment. Others felt that pre-trained persons

had to be paid higher wages and thus labour costs could be economised on by engaging fresh recruits and training them. Sometimes the skills required were very specific to an industry and not so sophisticated as to require a special programme of training in a vocational institution. Thus before initiating any courses for the occupational trades listed above, it would have to be ensured that the courses would be feasible in terms of the depth of skill which needs to be imparted for these trades.

Table V.6 also reveals that apart from the technical and skilled workers, there has been a considerable expansion in two white collar categories, viz., Occupational Trade No. 30 pertaining to Store Assistants and Trade No. 31 pertaining to Clerk & Typists. The vocational courses relevant for these categories, viz., Course Nos. 8, 43 & 45 have already been included in the districtwise feasible lists given in table III.8. It may also be pointed out here that the question regarding vacancies, which has been tabulated in table V.6, did not yield any worthwhile results.

The main results of schedules pertaining to the commercial and office type establishments are presented in table V.9. As may be observed, the bulk of employment in this sector was, in the first place, in the category of teachers and secondly, in white collar or un-skilled job categories like Clerks, & Steno-typists, Village Secretaries, Beldars, Chowkidars and Peons. Only a few technical hands are needed in categories like Line Superintendent, Assistant Foreman and Draughtsman. Another characteristic feature is the almost stagnant level of employment reported for most of the categories between 1974 & 1976, revealing

Table V.6: An analysis of non-farm establishments Schedule

Occupation/ Trade	No. of persons working in		%age in each occupation to total in 1976	%age growth in 1976 over 1974	No. of vacancies in 1976	Vacancies outstanding for want of suitable persons in 1976	Minimum qualifications required
	1974	1976					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Managing Directors	12	15	.475	25			Graduate
2. Managers	58	71	2.25	22.4			Graduate
3. Production Engineer	3	5	.158	66.6			"
4. Chief Engineer	-	1	.031	n.s.			Engg. Grad.
5. Company Secretary	1	1	.031	n.s.			C.A.
6. Personnel Officer	2	2	.063	n.s.			Graduate
7. Welfare Officer	-	1	.031	n.s.	1	100	Graduate
8. Engineer	8	27	.085	212.5	2	3.7	"
9. Purchase Officer	6	14	.443	116.6			"
10. Sales Officer	2	6	.158	150			"
11. Material Controller	1	1	.031	-			Post Grad.
12. Quality Control Inspector	11	11	.349	n.s.			Diploma in Engg.
13. Technician	-	2	.063				
14. Technical Assistant	17	27	.85	58.8			M.Sc.
15. Supervisors	63	78	2.47	23.8			Mat.
16. Foreman	39	44	1.392	12.8	1	2.27	Mat.
17. Accountant	30	38	1.202	26.6			Graduate
18. Personal Assistant	1	1	.031	n.s.			"
19. Chemists	7	8	.253	14.29			B.Sc.
20. Nutritionist	-	1	.031				Vet. Sc.
21. Store Incharge	9	10	.31	11.11			Mat.
22. Office Incharge	6	6	.19	-			"
23. Dept. Incharge	2	2	.063	n.s.			"
24. Foundry "	1	1	.031	n.s.			not specifie
25. Purchase Assistant	-	-	-	-			-
26. Sales Assistant	2	6	.19	200			Mat.
27. Security Officer	-	1	.031	-			"
28. Personal Asstt.	1	1	.031	n.s.			Graduate
29. Development "	-	1	.031	n.s.			Matriculate
30. Store Assistant	19	30	.949	57.8			"
31. Clerk +typist	56	91	2.87	62.5	1	.99	"
32. Clerk +Store Inch.	2	2	.063	n.s.			"

Table V.6   - 2 -

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Stenographer	5	8	.253	60			Mat.
Cashier	1	2	.063	100			Mat.
P.A. to M.D.	2	2	.063	-			Grad.
Foundry Incharge	1	1	.031	n.s.			n.s.
Draughtsman	7	8	.253	14.29	1	12.5	I.T.I.
Turner	113	200	6.3	76.9	21	10.5	Mat.
Die-fitter	16	19	.601	18.75	1	5.26	n.s.
Hammerman	-	1	.031				n.s.
Machine Operators	36	85	2.69	136.1			n.s.
Apprentices	39	45	1.42	15.38			n.s.
Electroplater	3	3	.095	-			n.s.
Pressman	71	81	2.56	14.08	3	3.7	n.s.
Assemblers	12	15	.475	25			n.s.
Fitters	92	145	4.52	57.6	15	10.34	n.s.
Milling man	4	10	.31	150			n.s.
Shaperman	2	4	.126	100			n.s.
Electrician	7	9	.284	28.5			n.s.
Mistry	33	35	1.11	.606			n.s.
Carpenters	12	14	.443	16.66			n.s.
Mechanic	12	12	.38	n.s.	1	8.33	n.s.
Lathoman	17	21	.664	23.5	3	14.29	n.s.
Cutter +Beader	8	9	.284	12.5			n.s.
Welder	30	31	.98	3.33	1	3.23	n.s.
Brushmaker	5	6	.19	20			-
Guilderman	7	7	.224	-			n.s.
Wireman	2	5	.158	150			n.s.
Sweepers	25	25	.79	n.s.			n.s.
Peons	19	20	.63	5.26			-
Painter	2	3	.095	50			n.s.
Winder	4	4	.126	-			n.s.
Moulder	28	46	1.46	78.6	7	15.2	n.s.
Chassis Maker	-	3	.095	-			n.s.
Fabricators	15	24	.756	60			n.s.
Pattern Maker	-	1	.031	-			n.s.
Blacksmith	6	8	.253	33.3			n.s.
Die-Maker	1	3	.095	200.	1	33.3	n.s.
Tool-Maker	-	3	.095	-			n.s.
Polisher & Glazer	41	68	2.15	65.8			n.s.
Cone-Maker	-	16	.507	-			n.s.
Grinder	16	15	.475	6.25	3	20	n.s.

Table V.6   - 3 -

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
73. Bufferman	5	6	.19	20			n.s.
74. Tonesman	18	18	.50	-			n.s.
75. Headerman	5	5	.158	n.s.			n.s.
76. Die-machine man	3	3	.095	n.s.			n.s.
77. Spinningman	1	1	.031	n.s.			n.s.
78. Boiler	11	12	.38	2.09			n.s.
79. Sheet rolling man	-	1	.031	n.s.			n.s.
80. Packers	17	17	.538	-			-
81. Tinplaters	1	1	.031	-			-
82. Ship House Worker	13	15	.475	7.69			n.s.
83. Jolly Workers	17	19	.601	11.76			n.s.
84. Glazers	9	9	.284	-			n.s.
85. Fireman	9	10	.31	11.11	1	10	n.s.
86. Stampers	7	7	.224	-			n.s.
87. Plastic Moulders	8	6	.19	-.25			n.s.
88. Potters	34	29	.91	-14.7			n.s.
89. Card Operators	2	4	.126	100			n.s.
90. Capsule Filler	-	3	.095				n.s.
91. Mixerman	20	40	1.26	100	1	2.5	n.s.
92. Tailors	4	4	.126	-			Mat.
93. Vulcanizer	4	4	.126	-			n.s.
94. Printers	5	1	.031	-80			n.s.
95. Compositors	8	9	.284	12.5			Mat.
96. Binders	1	2	.063	100			n.s.
97. Selectors	-	25	.79				n.s.
98. Salters	-	15	.475				n.s.
99. Unskilled labour	1129	1383	43.75	22.5	1	.072	-
100. Tinter	-	-			2		-

n.s. - means not specified.

Table V.7: Type of Additional Manpower Required for Expansion

Sl. No.	Type of Additional Manpower required for expansion	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIV	Total
							Manpower required for each type of Industry								
1.	Engineer	1					1	1		2		3	1		8
2.	Production Officer								1						1
3.	Supervisor									2	2				4
4.	Foreman						1	1		4					6
5.	Chemist							1	3						3
6.	Optician						2	1							2
7.	Printers						11	1	1	7	33	3	6		62
8.	Turner						1	1		2	24	3	2		33
9.	Fitters		1				1	1	2	2	2		5		10
10.	Die-fitters						2	1		3	1	1	1		7
11.	Die-Makers						1	1		5	7	1	2		19
12.	Latheman						1	6	3	2	26		7		60
13.	Machine Operator			10		2	1	1	3	10	5		2		22
14.	Moulder			2	1		1			1	1		1		7
15.	Boilerman				1	●	1			1	3		8		10
16.	Welder						5	5					10		18
17.	Wireman						1	5		1			1		1
18.	Drill man										27		1		28
19.	Grinderman						9				1		1		1
20.	Mixerman												2		12

Table V.II

Type of Additional Manpower required for expansion

Industrial Code* — Manpower required for each type of industry

Type of Additional Manpower required for expansion	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	Total
Pressman		4							4	1		4			13
Milling man			1					2		26	2			7	34
Polishman										2					2
Jigbore man									1						1
Head mistry										2					2
Special skilled man for glass industry															-
Fireman									2						2
Fabricators							4			5					9
Coating man						2	2								4
Blacksmith						3	2								5
Packers		20													20
Tailors	10														10
Salter	25														25
Openers	25														25
Selectors					2										2
Compositors					1										1
Book binder					1										1
Proof Reader										1					1
Bufferman	7	2													9
Helpers				1	2	33	11	39		23	42			40	193

Table V.8 : Course-wise Intake Capacity and Vocational
Education and Training Institutions located
in Gurgaon district.

Sl. No.	Course	Sanctioned Intake Capacity
1.	Diploma in Electrical Machine Appliances	30
2.	Diploma in Electronics	15
3.	Diploma in Machine Tool Operation and Maintenance	30
4.	Diploma in Radio and T.V.	15
5.	Diploma in Refrigeration and Air Conditioning	15
6.	Diploma in Welding and Sheet Metal Technology	15
7.	Blacksmith	16
8.	Carpenter	64
9.	Draughtsman (Civil)	48
10.	Draughtsman (Mech.)	48
11.	Electrician	128
12.	Fitter	192
13.	Lineman	32
14.	Machinist	72
15.	Machinist (Composite)	72
16.	Mechanic (Diesel)	48
17.	Mechanic (General)	15
18.	Mechanic (Instrument)	32
19.	Mechanic (Motor)	64
20.	Mechanic (Radio and T.V.)	48
21.	Mechanic (Refrigeration & Air Conditioning)	32
22.	Mechanic (Tractor)	64
23.	Moulder	48
24.	Painter	16
25.	Plumber	16
26.	Sheet Metal Worker	16
28.	Tractor and Farm Machinery Technology	20
28.	Tool and Die Maker	32
29.	Turner	144
30.	Welder	84
31.	Wireman	32
32.	Certificate Course in Leather Tanning	15

Table V.8   - 2 -

Sl.No.	Course	Sanctioned Intake Capacity
33.	Cutting and Tailoring	112
34.	Embroidery and Needle Work	54
35.	Hand Composing and Proof Reading	16
36.	Hand Weaving	15
37.	Printing Machine Operator	16
38.	Soap Making	15
39.	Stenography (English)	96
40.	Stenography (Hindi)	32
41.	Auxiliary Nurse Midwifery	64
	Total	1,948

.

limited potential for expansion of employment in this segment of Gurgaon's economy. Vocational courses which might be needed for requirements of this set of non-farm establishments have already been listed in the district feasible list.

V.5   Results of the Impressionistic Survey

Here we present results based on interviews with knowledgable persons. During the course of these interviews we were also able to get an idea about the main prospective units which are likely to come up in Gurgaon district and their likely implications for vocational courses. The results of this part of our survey cover the ground meant for schedules II & III. The material became available in a form in which it could not be meaningfully tabulated. But the main conclusions were fairly clear and in some ways clearer than can be evident from tabulation.

There are a few very large scale units which are likely to come up soon in the vicinity of Gurgaon town - work on some has already been started. These are listed below :

    i)   A Watch Factory in collaboration with a Swiss firm

    ii)   An IDPL unit for the manufacture of drugs and Pharmaceuticals

    iii)   A Scooter Manufacturing Factory.

    iv)   An Electronics Complex in Dhundhera Industrial Estate.

In addition to these definite proposals, there are two large units fairly likely to come up. These are a large Engineering Works and a factory by Purolator India Ltd. All these industries are of a type which would

require a large variety of inputs to be supplied by
ancillary units. Ancillary units to these big prospective
concerns thus provide an avenue for self-employment of young
entrepreneurs. This part of the district is, therefore,
expected to receive a big boost in industrialisation in
the coming 5-10 years and skills of a new type are going
to be in demand. With this background of prospective
industrialisation, the following type of vocational courses
appear to be feasible proposition for the future:

    (i) Courses related to precision
       work for watch manufacture.

    (ii) Course in Electronics.

    (iii) Pharmaceuticals.

    (iv) Scooter plant training.

In addition to these, vocational courses related
to a few important existing industries of Gurgaon town area
have been suggested to us as being feasible in the light
of their expected expansion.

    (i)   Rubber Technology

    (ii) Plastic Technology

    (iii) Ceramics - Designing & Technology.

    (iv) Spectacle Frames Making.

The following economic activities and occupations
allied to them were reported decaying ones in the district:

    (i) Soft drinks and aerated water
       industries.

    (ii) Cotton spinning weaving in the
       Khadi Sector

    (iii) Manufac... ctural Clay.

    (iv) Manu... ne Movers and Boilers.

require a large variety of inputs to be supplied by ancillary units. Ancillary units to these big prospective concerns thus provide an avenue for self-employment of young entrepreneurs. This part of the district is, therefore, expected to receive a big boost in industrialisation in the coming 5-10 years and skills of a new type are going to be in demand. With this background of prospective industrialisation, the following type of vocational courses appear to be feasible proposition for the future:

    (i)   Courses related to precision work for watch manufacture.

    (ii)   Course in Electronics.

    (iii)   Pharmaceuticals.

    (iv)   Scooter plant training.

In addition to these, vocational courses related to a few important existing industries of Gurgaon town area have been suggested to us as being feasible in the light of their expected expansion.

    (i)   Rubber Technology

    (ii)   Plastic Technology

    (iii)   Ceramics - Designing & Technology.

    (iv)   Spectacle Frames making.

The following economic activities and occupations allied to them were reported as decaying ones in the district:

    (i)   Soft drinks and carbonated water industries.

    (ii)   Cotton spinning and weaving in the Khadi Sector.

    (iii)   Manufacture of Structural Clay.

    (iv)   Manufacture of Prime Movers and Boilers.

Finally, it needs to be borne in mind that, as emphasised earlier, the results of this chapter are intended to present mainly a blown up picture of a limited segment of Gurgaon's economy - the organised non-agricultural activities, mainly in the industrial sphere. For an overall picture and its vocational implications, the approach of Chapter III and to some extent that of Chapter IV, it appears to us, has to form the backbone of the methodology of vocation identification, in spite of its limitations. The significance of this may be illustrated by a small illustration. Vocations related to leather industry have not found a mention in the present chapter, even though as section 2 of this chapter brings out, leather based industries occupy quite a prominent position in cottage industries of Gurgaon - a sector which falls outside the frame of the survey field. But the analysis of chapter III had spotted Leather Technology (Course No. 18) as a feasible vocational course for Gurgaon district. This highlights the importance of considering the various approaches experimented with in this study as being complementary rather than mutually exclusive ones.

Table V.9 - Analysis of Commercial Establishment
Schedules

Occupation	Minimum quali-fication required.	Employ-ment in 1974	Employ-ment in 1976	No. of matriculates
(1)	(2)	(3)	(4)	(5)
1. Executive Engineer or Sub-Divisional Engineer	Engg. Graduate	27	26	26
2. Sectional Officer	Diploma in Civil Engg.	78	76	76
3. Clerks	Matriculate	188	184	184
4. Accountant cum Auditor	Matriculate	24	24	24
5. Draughtsman	I.T.I.	18	17	17
6. Steno-typist	Stenography	16	16	16
7. District Welfare Officer	Graduate	1	1	1
8. Tehsil Welfare Officer	Matriculate	5	5	5
9. Social Workers	Matriculate	9	9	9
10. Trainers	Matriculate	2	2	2
11. Road Inspectors	Matriculate	11	11	11
12. Work Mistry	Matriculate	4	2	2
13. Peons	-	88	84	2
14. Ferro-Khalasi	-	8	8	-
15. Chowkidar	-	31	30	-
16. Sweepers	-	18	21	-
17. Electrician	-	-	3	-
18. Executive Officer	Graduate	5	5	5
19. Statistical Assistant	Post Graduate	1	1	1
20. Beldars	-	30	30	-
21. Store-Keeper	Matriculate	1	1	1
Line Superintendent ~ Asstt. Foreman	Dip. in ITI	30	23	23
"	Middle Class (ITI)	10	8	-

Table V.9 — 2 —

(1)	(2)	(3)	(4)	(5)
24. Block Development — Panchayat Officer	Graduate	1	1	1
25. Drivers	—	7	7	7
26. Social Education Purchase Officer	Matriculate	1	1	1
27. Village Secretary	Matriculate	14	14	14
28. Chairman	Not fixed	1	1	1
29. Educational Officer	B.A. (B.Ed)	28	28	28
30. Science Specialist	B.Sc (B.Ed)	1	1	1
31. Superintendent	Matriculate	1	1	1
32. Computer Operator	Matriculate	5	5	5
33. Principals	B.A. (B.Ed)	18	18	18
34. Head Masters and Head Mistresses	B.A. (B.Ed)	104	104	104
35. Masters & Mistresses	—do—	1450	1450	1450
36. Junior Basic Training Teachers	Matriculates	5292	5292	5292
37. Crafts & Arts Teachers	Matriculates	813	813	813
38. Carpenters	—	1	1	—

District		1	2	22	23	24	25	26	27	28	29	30	31	32
GUJARAT														
Baroda (M)	R			x		x				x	x			
	U		x	x					x	x	x		x	x
Banas Kantha (M)	R													
	U			x										
Amreli (M)	R													
	U													
Surat (M)	R		x	x		x								
	U		x	x										
Sundernagar (M)	R			x		x		x	x				x	
	U		2											
Khaira (M)	R													
	U													
Ahmedabad (IH)	R			x										
	U		x	x	x	x			x		x		x	x
Valsad	R		x	x	x	x								
	U		x	x		x								
Kutch (M)	R			x										
	U													
Sabarkanta (L)	R												x	
	U													
Rajkot (H)	R												x	
	U		x								x	x	x	
Jamnagar (H)	R				x									
	U		x	x	x									
Broach (L)	R													
	U			x										
Panchmahal (L)	R			x										
	U													
Bhavnagar (H)	R			x	x								x	
	U		x											
Gandhinagar (IH)	R													
	U													
Kheda (M)	R		x	x			x		x					
	U		x	x										x
Mehsana (H)	R		x	x	x									
	U		x	x	x									
Dangas (VL)	R													
	U													

District		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
GUJARAT																						
Baroda (M)	R				x	x			x	x		x		x							x	
	U		x	x	x	x	x	x	x			x		x				x				
Banas Kantha (M)	R				x				x	x												
	U				x																	
Amreli (M)	R				x																	
	U				x				x			x										
Surat (M)	R		x		x	x			x	x		x					x	x				
	U		x	x	x	x	x		x	x		x						x				
Sundernagar (M)	R								x													
	U		x	x	x	x	x	x	x	x		x		x				x				
Khaira (M)	R																					
	U																					
Ahmedabad (IH)	R				x	x		x	x	x		x					x				x	
	U		x	x	x	x	x	x	x			x		x				x		x	x	
Valsad	R		x		x	x		x	x	x		x						x				
	U		x	x		x	x		x			x						x		x		
Kutch (M)	R				x	x				x		x										
	U					x			x			x										
Sabarkanta (L)	R				x			x	x		x		x							x		
	U				x																	
Rajkot (H)	R				x	x		x	x		x											
	U		x	x	x	x	x	x			x					x						
Jamnagar (H)	R					x																
	U		x	x	x	x	x		x			x		x				x				
Broach (L)	R					x																
	U			x		x			x			x						x				
Panchmahal (L)	R			x	x	x	x		x	x		x			x							
	U				x	x			x			x										
Bhavnagar (H)	R				x	x			x	x		x										
	U		x	x	x	x	x	x	x			x		x				x				x
Gandhinagar (IH)	R					x			x													
	U								x													
Kheda (M)	R		x	x	x	x	x	x	x	x		x		x				x		x		
	U		x	x	x	x	x	x	x			x		x				x		x		
Mehsana (H)	R		x		x	x	x	x	x			x		x				x		x	x	
	U		x	x	x	x	x		x			x		x				x		x	x	
Dangas (VL)	R				x																	
	U																					

Table III

District		33	34	35	51	Total No. of feasible courses
Baroda (M)	R					22
	U					31
Banas Kantha (M)	R					7
	U					6
Amreli (M)	R					2
	U					7
Surat (M)	R					20
	U					18
Sundernagar (M)	R					4
	U					24
Ahmedabad (IH)	R					13
	U					32
Valsad	R					20
	U					21
Kutch (M)	R					7
	U				1	9
Sabarkanta (L)	R			1		15
	U			1		7
Rajkot (H)	R				x	14
	U			1	x	23
Jamnagar (H)	R					5
	U			1		21
Broach (L)	R					1
	U			x		13
Panchmahal (L)	R			x		17
	U			x		11
Bhavnagar (H)	R			x		10
	U			x		24
Gandhinagar (IH)	R					4
	U					2
Kheda (M)	R		x	x		26
	U			x		25
Mehsana (H)	R	x	x	x		27
	U			x		25
Dangas (VL)	R					1
	U					x

Table III.8

District		33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Baroda (M)	R				x		x	x	x		x	x		x	x	x	x	x
	U				x		x	x	x	x	x	x	x	x	x	x	x	x
Banas Kantha (M)	R								x			x		x	x			
	U								x			x		x			x	
Amreli (M)	R											x						
	U								x		x	x				x		
Surat (M)	R				x				x	x	x	x		x	x	x	x	x
	U				x				x		x	x		x		x	x	x
Sundernagar (M)	R											x		x	x			
	U				x				x	x	x	x		x		x	x	x
Ahmedabad (IH)	R								x		x	x			x			x
	U			x		x			x	x	x	x	x	x	x	x	x	x
Valsad	R								x	x	x	x	x	x	x	x	x	x
	U								x	x	x	x	x	x	x	x	x	x
Kutch (M)	R											x			x			
	U				x				x		x	x		x		x		
Sabarkanta (L)	R				x				x		x	x		x	x	x		
	U				x				x		x	x		x	x	x		
Rajkot (H)	R								x		x	x		x	x	x		
	U				x				x	x	x	x	x	x		x	x	x
Jamnagar (H)	R								x			x				x		
	U				x				x	x	x	x	x	x		x	x	x
Broach (L)	R																	
	U				x				x		x	x		x		x		x
Panchmahal (L)	R				x				x	x	x	x		x	x	x		
	U				x				x		x	x		x	x	x		
Bhavnagar (H)	R				x				x			x		x	x			
	U				x				x	x	x	x	x	x	x	x	x	
Gandhinagar (IH)	R											x		x				
	U													x				
Kheda (M)	R		x		x				x	x	x	x	x	x	x	x		
	U				x				x	x	x	x	x	x	x	x	x	x
Mehsana (H)	R	x	x		x	x			x	x	x	x	x	x	x	x	x	x
	U				x	x			x		x	x	x	x	x	x	x	x
Dangas (VL)	R																	
	U																	

Table

District		1	2	3	4	}	24	25	26	27	28	29	30	31	32
UTTAR PRADESH															
Mirzapur (M)	R		x												
	U		x	x											
Jhansi (M)	R														
	U			x	x										
Badam (L)	R				x										
	U														
Meerut (VH)	R		x	x	x		x			x				x	
	U														
Lucknow (VH)	R			x											
	U		x				x			x				x	x
Ghazipur (M)	R						x								
	U														
Shahjahanpur (M)	R				x										
	U						x								
Sultanpur (L)	R				x										
	U														
Kanpur (VH)	R		x	x			x								
	U		x	x	x		x			x				x	x
Agra (VH)	R										x				
	U			x	x		x				x		x		
Bahraich (L)	R														
	U														
Chamauli (VL)	R				x										
	U														
Pithoragarh	R				x										
Dehradun (VH)	R														
	U	x	x	x	x										
Jaunpur (L)	R			x	x						x	x			
	U														

Table III.

District		33	34	35	36	37	51	Total No. of feasible Courses
UTTAR PRADESH								
Mirzapur (M)	R				x			13
	U				x			17
Jhansi (M)	R							6
	U							16
Badam (L)	R							16
	U							3
Meerut (VH)	R		x			x		24
	U							
Lucknow (VH)	R				x			12
	U				x			20
Ghazipur (M)	R				x	x		15
	U							7
Shahjahanpur (M)	R				x			10
	U				x			11
Sultanpur (L)	R					x		16
	U							5
Kanpur (VH)	R		x		x			19
	U				x			27
Agra (VH)	R							13
	U				x			23
Bahraich (L)	R							8
	U							9
Chamauli (VL)	R							10
	U							2
Pithoragarh (L)	R							8
	U							2
Tehri Garhwal (L)	R							5
	U							2
Uttar Kashi (L)	R							3
	U							2
Dehradun (VH)	R							4
	U				x			18
Jaunpur (L)	R				x	x		25
	U	x			x			12

District		1	2	3	4	23	24	25	26	27	28	29	30	31	32
MAHARASHTRA															
Akola (V)	R	x			x	x									
	U		x		x		x								
Amravati (V)	R				x		x								
	U	x		x	x		x								
Jalgaon (M)	R		x		x	x	x	x	x		x				
	U		x	x	x										
Osmanabad (V)	R	x	x		x										
	U	x		x	x										
Nanded (V)	R	x			x	x									
	U			x	x										
Parbhani (V)	R	x	x												
	U	x		x											
Kolaba (V)	R	x	x	x	x						x	x			
	U	x		x						x	x				x
Nagpur (VH)	R	x			x		x								
	U		x	x	x	x	x				x	x		x	x
Nasik (M)	R	x	x	x	x										x
	U	x	x	x	x		x			x				x	x
Kolhapur (M)	R	x	x	x	x										
	U		x	x	x									x	
Thana (H)	R		x	x											
	U		x	x	x		x				x	x			x
Wardha (V)	R	x													
	U		x	x	x										
Bhandara (M)	R	x			x										
	U		x	x	x										
Bhir (V)	R	x	x		x										
	U			x											
Buldana (V)	R	x	x		x										
	U			x											
Chandrapura	R	x		x	x										
	U			x											
G. Bombay (E.H)	U	x	x	x	x	x	x				x	x	x	x	x
Ahmednagar	R	x	x	x	x		x	x	x		x				x

Ta

District		1	2	21	22	23	24	25	26	27	28	29	30	31	32

JAMMU & KASHMIR

District		1	2	21	22	23	24	25	26	27	28	29	30	31	32
Rajouri	R														
	U														
Udampur (L)	R														
	U														
Ladakh	R														
	U														
Kathua (L)	R														
	U														
Srinagar (VH)	R														
	U	X	]	X			X								
Jammu (H)	R	X	]												
	U	X	]	X											
Anantnag (L)	R														
	U														
Poonch (L)	R														
	U														
Baramulla (L)	R														
	U														
Doda (L)	R														
	U														

HIMACHAL PRADESH

District		1	2	21	22	23	24	25	26	27	28	29	30	31	32
Bilaspur	R														
	U														
Simla	R	X													
	U														

Table III-8 -10-

District		33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
HARYANA																				
Rohtak (M)	R								X	X	X	X	X	X	X	X				
	U				X				X	X	X	X		X		X				
Ambala (VH)	R			X	X				X		X	X		X	X	X				
	U				X				X	X	X	X		X		X	X			
Mahendragarh (L)	R				X							X		X						
	U				X				X		X	X		X		X				
Karnal (H)	R				X	X			X		X	X		X	X	X				
	U				X				X		X	X		X		X				
Gurgaon (M)	R				X	X			X		X	X	X	X	X	X	X	X		
	U				X				X		X	X	X	X		X				
Jind	R				X				X		X	X		X	X	X				
	U				X				X	X	X	X	X	X		X				
Hissar (M)	R				X	X			X		X	X		X		X		X		
	U				X				X		X	X	X	X	X	X		X		